

AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

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The Mechanical Engineering department of this paper will be under the charge of Mr. ZERAH COLBURN.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., NO. 9 SPRUCE ST.

Saturday, February 18, 1854.

Commercial Policy of Pennsylvania.---Americanism of the Journal.

The following article from the Pittsburgh Gazette, comes to us with a request, over the initials of J. E. T. (which will not be difficult to recognize,) for its publication.

The American Railroad Journal.—Among all the abusive and unjust remarks concerning Pennsylvania, which have disgraced the New York press of late, the *American Railroad Journal* has furnished the worst. It has borne off the palm in the race of blackguards. Its articles have exhibited an unfairness, a malice and a meanness we have never seen equaled. Human language seems too meagre for the rampant hate and fiendish malignity of the editor. Even in the very last number of his mercenary and contemptible sheet, the editor has compared the people of this State to a nest of pirates and marauders, whose whole object is to intercept the trade of the West, for

the purpose of abstracting toll from it. He says that Pennsylvania "ingenuity has found out a new mode of turning the position of the State to account; and this is by compelling every pound of freight passing through the State, to be lifted from one car to another." The italics are the editor's own.—This sneer has reference to the efforts of the people of Erie to obtain the break of gauge, and is as unjust to Pennsylvania, as it is contemptible on the part of that paper, which no longer ago than April 10th, 1852, contended for a break of gauge at Erie, on the very grounds for which the people of Erie have lately been contending, as will appear from the following leading editorial article of the paper of that date, which was also edited by the same individual who now presides over its columns. We extract the whole article:

"From the American Railroad Journal, April 10, 1852.

Gauge of Railroad from Buffalo to Cleveland.—From Cleveland, Ohio, to Erie, Pennsylvania, the Ohio gauge of four feet ten inches is used. Upon the Erie and Northeast Railroad, extending from Erie to the New York State Line, a distance of some eighteen miles, the wide, or six feet gauge has been adopted. From the State line to Buffalo, the four feet ten inch gauge prevails.

To whom this arrangement is owing we are not informed, but the genius of all evil himself could not have framed a more inconvenient, or one better adapted to obstruct business or travel. With the exception of the Buffalo and State line road, the only gauges known in this State are the four feet eight and a half inches, and the six feet. Common sense would seem to dictate that one of these should have been taken by the Lake Shore road. As it is, there must be transshipments at Buffalo, Dunkirk, the Pennsylvania State line, and at Erie; making four where there should have been but two at most. Either the wide or the narrow gauge should have been carried to Erie. That would have been a convenient place of transshipment, and would probably have been selected as such, had there been no break of gauge even there. There must be a limit to the distance to be run by freight and passenger cars. It is found to be more economical and convenient to transship freight from one train to another, than to run the train a given distance, on account of the difficulty of preserving order in the arrangement and distribution of the cars. We presume that under no circumstances whatever, would cars loaded at Cleveland be run through to this city. A break of gauge at some point upon the line between the above cities is not objectionable, provided it occurs at the most convenient point. But when there are three or four interruptions to the transit of merchandise and travel, within short distances, and at the most inconvenient places, they will be found to work a serious injury to traffic of all

kinds. We predict the evil will in a short time become so unbearable, as to work out its own cure. What the people of Erie were about, when an arrangement was completed, that completely prevented them from moving in any direction, is more than we can opine. At the Lake their road comes to a dead halt, and all through business has to be tumbled out of their own cars upon those of other companies. All these blunders must be remedied, and the sooner the better."

After reading the above, what confidence can be placed upon the assertions of a man who has been endeavouring for the last month to destroy the credit of Pennsylvania, to depreciate her bonds, and the bonds of her cities and railroads, and resorted to language which would disgrace the fishmarket, in speaking of the people of this great State. We have long entertained doubts of the statements of this paper in regard to railroads, fearing it was governed by its likes and dislikes, or more substantial reasons, but how any Pennsylvanian can hereafter put the least confidence in its statements, or countenance it in any form, and preserve his self-respect, we cannot see.

As a Railroad paper and laboring to promote the prosperity and security of Railroad interests, it ought to discountenance all illegal and fraudulent proceedings on the part of railroad companies. Instead of that, we find it defending the universally acknowledged fraud of the Franklin Canal Company, and lampooning Pennsylvania for the assertion of her sovereignty over her own territory! Such a Journal is wholly unworthy of the countenance of the great railroad interests of this country.

Is it? We will state the real issue presented in the Erie controversy, and then leave it for the public to pass sentence upon the question, whether we are true, or false, to the interests of American railroads.

The doctrine recently put forth by Governor Bigler, "that the territory of Pennsylvania extending from the Great Lakes to tide water, the State has a right to interpose her position, and make it available to promote the advantage of her own people", is not new. It is unfortunately a very old one. Neither is the present the first time in which it has been put in practice. When the Erie Railroad Company found that it could not get to Lake Erie, without traversing a small portion of the State, it applied for the right to do so. This at first, was refused in accordance with "Pennsylvania Policy"; but the privilege prayed for was at length granted upon the payment to the State, by the company, of an annual tax, of \$10,-

000! At the same time there is not the slightest doubt that the company have been the means of increasing the value of the taxable property of the State, at least \$30,000,000 and probably \$50,000,000. For more than 350 miles, the Erie road runs either upon, or within a short distance of the northern and eastern boundary of the State, affording a new and convenient outlet to an immense portion of its territory, previously excluded from market. The people of that portion of the State benefited, were most eager to have the road brought to them. As an equivalent for the stipend by the company, neither the slightest privilege nor equivalent was yielded by the State. The latter saw that there was a chance to make some money out of her "position", and exacted it. The act is precisely the same in kind, with the toll levied by a marauding chieftain for allowing merchandize to pass through territory over which he exercises sway.

When the New York Railroads reached Lake Erie, the subject of their extension, west, was necessarily raised. It was then, that the people of Erie began to assert their intention to participate in the advantages of the Pennsylvania doctrines of "position". Encouraged by the successful levy made upon the Erie Company, they struck for higher game, which was no less than to make their city the terminus of the Railroad, of New York and New England running west; and to render their port the sole means of communication between these roads, and the commerce of the interior. The following article taken from the Erie Gazette, which was, and has always been, one of the organs of Pennsylvania exclusiveness, as it has been of the Erie rioters, published in the Journal Sept. 28th, 1850, will show the nature of the claims then put forth.

"This road" (the road running East) "so grand in conception and so vast in result, we would convert not alone to our general, but to our particular benefit. Having the power, we need only the disposition to do it. As our contemporary of the Observer has remarked, 'our county holds the key to the great western world and can turn the lock so as to forever shut off an eastern railroad connection with that world, if she chooses.' Will we not exercise this power firmly, fearlessly and judiciously, unimpaired by the menaces of blustering corporations abroad—unseduced by the gilded bait of dollars and cents. A golden opportunity is now presented—the last, we fear, that will ever be offered of building up Erie, and placing her in a position of honorable and independent rivalry with other cities. Let us, as citizens, wake up from our lethargy, our culpable indifference, upon this important subject. Let us take a deeper interest in it—let us speak out boldly and fearlessly, and determine that foreign influence shall not assume and maintain the direction of an important thoroughfare through our county. Let us show a truly loyal spirit, and resolve that Erie shall be something more than a 'watering place' on the great lake shore iron-horse course."

Such was the ground taken by the people of Erie in 1850, which was nothing less than to cut off all communication between the east and west, except through their harbor! To the article quoted, are added the following comments, which show that at the time our views were in exact harmony with those more recently expressed:

"So, then, Erie is to constitute herself an impassable wall, which is to forever cut off all connection between the railroads of New York and New England, amounting to an extent of line of 4,000 miles, and those of the west. For the benefit of the Erie people the distance from that place to

the Ohio State-line is to be passed over both by passengers and freight by the old mode of conveyance; and a tribute, in the shape of the increased expenses of travel, is to be paid by the greater portion of the business men of the country. Erie, by virtue of her position, is going to tax every man and every pound of freight, that must pass through her town. The ground taken by this place is a most striking illustration of the necessity of free railroad laws in every State. The doctrine here asserted, if carried out, would put a stop at once to the whole internal commerce of the country. In the end, to be sure, it could not be sustained in any case, against the united sentiment of the whole community, but until public opinion could exert its corrective influence, great annoyance and inconvenience might be suffered."

Again. To keep New York outside her territory, the Legislature of Penn. in 1852 passed a law, prohibiting the introduction of the Erie gauge into her frontier. This act was hailed with extravagant manifestations of joy, by the Press of Philadelphia in particular. To show the objects proposed to be effected by the gauge Law, we copy the following from the Philadelphia U. S. Gazette, which is acknowledged to be the most influential and authoritative paper in the State:

"The Law it will be seen, keeps the New York influence outside of the State lines, and harmonizes the railroads of Pennsylvania into one complete system. It avoids transshipment within the State, and keeps our grasping neighbor within her own bounds; and, by binding together the interests of all counties, will foster everywhere a good feeling for Philadelphia. Where a difference in the gauge of railroads renders a transshipment at some point inevitable, it should be fixed near the boundary, for reasons so palpable and convincing as to require no comment. As every transshipment, forced by a change of gauge, is equivalent to fifty miles of road, it is quite apparent that it never should take place in the middle of Pennsylvania, for that would turn the trade of the northern half of the State away from us forever.

Philadelphia, to be strong over the whole western country, must first be strong in her own State. She must first be allied in interest and intercourse with all parts of the commonwealth, and thus acquire strength at home. Her ground plan of operation should cover the whole of the State of which she is the metropolis—her connections with the improvements of other States can then be made and controlled in such a manner as will fill her coffers and swell her commerce. Pennsylvania soil should not be used as a highway leading to and from her rival and competitor—it should be ramified by railroads uniting in Philadelphia, as the human body is coursed by arteries centering in the human heart.

New York has long indulged the hope and expectation of running across eastern and northern Pennsylvania, to shorten her railroad distance to the Ohio and the lakes. It has been her aim to penetrate Pennsylvania on the north with the six feet gauge of track, and on the east with the New Jersey track of four feet ten inches gauge, and so, while running through the State, secure its local interior trade to the loss and injury of Philadelphia. But this cunning game has been effectually checked in the adoption of the gauge law above alluded to."

We give our comment then made upon the above article:

"Railroads are the agents of commerce, and we have always maintained the ground, that commerce should determine the direction and the manner in which they should be built, upon the same principle, that the wants of commerce determine the model of the ship, and its destination when freighted. The people of the State of New York, have recognized this principle to the fullest extent, in their railroad Legislation.

The State of Pennsylvania on the other hand, sedulously pursues a different policy, and seeks to throw barriers in the way of commerce, and taxes

the transportation both of passengers and merchandize, for her own supposed benefit."

We invite comparison between the remarks made by us, two, and four years since, and those of a more recent date in reference to the Erie matters. They show a most perfect consistency of our views throughout.

We now come to the recent authoritative announcement of the Pennsylvania Doctrines by the Governor of the State.

"It must be clear to the impartial observer, that the Legislature never intended, by any previous act, to authorize the construction of a railroad between the City of Erie and the Ohio line. Indeed, the highest judicial tribunal in the State has expressed the opinion that no such authority can be found in the charter of the Franklin Canal Co.; and, in my opinion, the grant should hereafter be made on such conditions only, as will protect and advance the interest of the people of Pennsylvania; so far as they may be involved in the subject. It so happens that Pennsylvania holds the key to this important link of connection between the East and the West, and it must unhesitatingly say, that where no principle of amity or commerce is to be violated, it is the right and the duty of the State to turn her natural advantages to the promotion of the views and welfare of her own people.

It may be said that a restriction that would require a break of railroad gauge at the harbor of Erie, would be the use of an illiberal principle.—The answer is, that the necessity for a break of gauge between the Ohio line and the seaboard exists, as a consequence of a difference in the width of the New York and Ohio Roads. The only question to settle, therefore relates to the point at which it should occur. I have been able to discover no reasons, founded in public policy, why the break should be fixed at Buffalo, that do not apply with equal force in favor of Erie. Tonnage and passengers can be as well transhipped at the latter, as at the former city.

So far as concerns the benefits to either city, incident to a transshipment, the idea is unworthy of notice. But the effects of a break of gauge, and consequent transshipment east of Erie, upon the business of that harbor, must be paralyzing, if not fatal. It would virtually require shipments to be made either at Cleveland or Buffalo. Scarcely less embarrassing would this arrangement be upon the interests of the Sunbury and Erie Road, or any other avenue that may hereafter connect the lakes with the city of Philadelphia.

It may be that neighboring States, possessing similar natural advantages, would give them away for our benefit, but I have not been able to discover any fact in their former policy, to justify such a conclusion. I shall await your action with anxiety."

We have thus shown, by indisputable evidence, that the people both of the State, and of Erie, intended to cut off all communication between the Railroads of New England and N. York and the West except what was maintained through the harbor of that town. The right to build such road, to use the language of Governor Bigler, was steadily refused. It was the failure to get a new charter that led the parties interested in a through railroad route, to adopt the charter of the Franklin Canal Company, which was believed to confer sufficient authority for a railroad from Erie to the Ohio State Line. Under this charter, the road was commenced and has been built. Repeated attempts have been made to stop its progress by injunction, but the courts as often refused to interfere, on the ground that the complaints made did not show that any person had been injured by the action of the Franklin Company, consequently that no cause for action existed.

It was not until it was seen by the people of

Erie, that they could not cut off the East from all connection with the west, that they got up this break of Gauge doctrine, for the purpose of swindling commerce, which is the cause of all the mischief and disturbance which has since followed.

The article copied from the *Journal* by the *Pittsburg Gazette*, and about which such an ado is made, is in entire harmony with whatever we have said in reference to the Erie affairs. At that time, freight arriving to or going from New York, had to break bulk at Buffalo, Dunkirk, the Pennsylvania State line, and Erie; four breaks, where there should be only one. A much better arrangement would certainly have been, to have carried one of the two New York gauges to Erie, which would have given one uninterrupted rail to N. York. We regard the numerous breaks of gauges in this country as the crowning misfortune of our railroads, and we desired to see the evil which they caused done away with as fast as possible. The article shows that the idea of a break of gauge for the benefit of the break, never entered into our mind. We were condemning all breaks. In reference to such, we said, in the article quoted, that—

"Where there are three or four interruptions to transit of merchandise and travel, within short distances, and at the most inconvenient places, they will be found to work a serious injury to traffic of all kinds. We predict that the evil will, in a short time, become so unbearable as to work out its own cure. All these blunders must be remedied, and the sooner the better."

Notwithstanding the above, the article is quoted to show that we were in favor of a break at Erie!

In all the recent discussions which have taken place, the question whether Erie was, or was not, a convenient point for breaking bulk, for merchandise passing from East to West, has never been raised. As the Ohio gauge is carried into New York, it is clearly not the convenient point. The people of Erie, and Governor Bigler, admit this fact by claiming that a free passage through the town would ruin its business. The railroad companies and the public agree with Erie and Gov. Bigler. If it were the convenient point, the change would take place there without compulsion. It being admitted on all hands, therefore, that freight would not voluntarily stop, the people of Erie and the State determined to force it to do so, for the purpose of making money out of the labor a transfer involves, and of turning business from New York. It is against this doctrine, and this alone, that we have protested. We have made no other issue. The convenient point of transfer, or whether any transfer was required, has never been once alluded to. The substance of our reasoning has been this:—"If a break may be made for the benefit of one place, it may, with equal reason, be made at another; consequently commerce is at the mercy of every petty community through which it passes." Against such exclusiveness we have always, on all occasions, been a constant opponent, and have uniformly maintained the ground that commerce should be just as free to select its routes and instruments, as far as works of internal improvement were concerned, as it is to determine the model of a ship, its cargo or its destination. This is our Americanism. It ignores State Boundaries altogether, and will wage eternal hostility with whatever seeks to oppress the business of

the country. On this point our tone has been uniform, and we can see but little probability of any change ahead.

The writer in the *Gazette*, (who by the way is not its editor, but a certain railroad official, not 1000 miles from him,) objects to the style of our articles. "Human language," says he "seems too meagre for the rampant hate and fiendish malignity of the editor." The following is the quotation, and the only one, adduced to sustain the above charge:—"Ingenuity has found out a new mode of turning the position of the State to account; and this is, by compelling every pound of freight passing through the State to be lifted from one car to another." If here is not a tumble from the sublime to the ridiculous, there never was one. We merely stated the result of the policy of Gov. Bigler, in the most meagre language possible. The quotation is characteristic of all our articles. The truth is, the writer in the *Gazette* sat for his own portrait when he thought he was painting ours. He has drawn a capital likeness, and which everybody recognizes at the first glance. We do not write *billingsgate*, nor do we let it into our paper when we can well help it, except occasionally to hold up a mirror for a person to see his own likeness in, as in the present case.

We have attacked the commercial policy of Pennsylvania, and shall continue to do so, so long as its obnoxious features remain. We utterly loathe and repudiate the whole ground upon which it is based. But while this is so the roads of no State in the Union have occupied a greater share in our columns than those of that State.—Even the Pennsylvania road, upon which it is admitted the salvation of Philadelphia rests, has occupied more space devoted to favorable notices, than the New York Central, Hudson River, and Erie roads, altogether! Our notices of this road have been uniformly favorable, both as to its business prospects, and management. It is well known, that in private conversation, we always expressed a belief that it would prove one of the best paying lines in the United States. Of a very different character have been our notices of two of the great New York lines.

The roads of Pennsylvania coming into this market for money, have received the best support and co-operation that we could give them. The same is true of the roads of Ohio and Indiana, which may be properly regarded as legitimate extensions of the Pennsylvania lines of improvement, such as the Ohio Central, Ohio and Pennsylvania, Cleveland and Pittsburg, Cleveland and Mahoning, Steubenville and Indiana, Cincinnati and Marietta, Ohio and Madison, Springfield, Mount Vernon and Pittsburg, and Chicago and Fort Wayne Railroads. These roads are regarded with peculiar favor by Pennsylvania, and many of them have been directly encouraged by the Pennsylvania Central and other interests. They are the roads particularly adapted to open up the trade of the West to Philadelphia. Yet the money to build all these roads has been furnished by New York capitalists. New York has opened the West to Pennsylvania. But for the money the former has furnished, the latter would have, in a great measure, been isolated from the Great Valley. All the Presidents of the above roads will do us the justice to say that we have done what we could to aid them in building Pennsylvania roads. This

is the anti-Americanism, or anti-Pennsylvaniaism, that we are called to plead guilty to.

If we are anti-American, there are a great many in the same category. Our course has met the warmest approval of the very parties who are likely to suffer the most from it:—The holders of Pennsylvania securities. The rapid fall in the market value of these securities, shows how decided has been the tone of the public condemnation of the Erie outrages. The editor of the *Gazette*, instead of admitting false and abusive articles into his paper, would do much better to spend his time in investigating the causes that have produced such a sudden and excessive decline in the value of Pittsburgh city, and Alleghany county Bonds. We are satisfied that he will find some other cause for this than paragraphs of a paper published in a distant city.

Reading Railroad.

The earnings for the year ending Nov. 30th, 1853, were from the following sources:

| | |
|--|----------------|
| Earnings from passengers..... | \$225,763 33 |
| Earnings from merchandise carried..... | 180,611 80 |
| Earnings from coal, carried at \$1 42 1/2 per ton..... | 2,254,694 17 |
| Earnings from mail, etc..... | 27,218 29 |
| Total earnings..... | \$2,688,287 59 |
| Deduct working expenses..... | \$1,056,551 53 |
| Deduct drawbacks, etc..... | 165,985 99 |
| Deduct interest and renewal..... | 678,888 23 |
| | 1,901,425 75 |

| | |
|------------------------------------|--------------|
| Leaving for dividend fund..... | \$786,861 84 |
| Add balance dividend fund, 1852... | 2,115 66 |

Total dividend fund..... \$788,977 50

Which has been disposed of as follows:

| | |
|---|------------|
| Dividend on preferred stock, July 1853, and January 1854..... | 108,626 00 |
| Dividend on common stock, July 1853..... | 172,934 83 |
| Paid State tax on dividend Dec. 1852, and July 1853..... | 23,283 71 |
| Paid sinking funds for bonds, 1836 and 1860..... | 25,000 00 |
| Paid sinking funds for bonds, 1849 and 1870..... | 75,000 00 |
| Paid for balance at the Dr. of interest account..... | 101,400 29 |

\$506,244 83

| | |
|--|--------------|
| Leaving for balance of dividend fund for 1853..... | \$283,782 67 |
|--|--------------|

A dividend of 3 1/2 per cent. has since been declared upon the common stock, for January, 1854, which makes seven per cent. for the year, on all the stock, and leaving a surplus of dividend fund on hand of \$52,152 89. The sinking funds give a fund for distribution in common stock of 1 1/2 per cent. on both stocks, in addition to the cash dividends, and leaves a surplus of \$1,076 29 for the preferred, and \$43,094 97 for the common stock, for future division. The gross receipts for 1853 exceed those of 1852 by \$207,661 18.

| | |
|--------------------------------------|--------------|
| Those from coal being in excess.... | \$104,017 00 |
| Those from passengers, in excess.... | 57,333 04 |
| Those from merchandise, in excess.. | 41,848 19 |
| Those from United States Mail, etc.. | 4,662 92 |

\$207,661 18

The expenses in each department are less than in 1852, giving increased net profits of \$213,762 78.

Trade of St. Louis and of Alton.

From the statistics of trade of St. Louis for 1853, we gather the following facts, showing the source of the products arriving at that city. Incidentally, it affords a statement of the business of Alton:

| <i>Flour.</i> | |
|--------------------------------------|---------|
| From the Missouri river, bbls..... | 9,264 |
| From the Illinois " "..... | 45,131 |
| From Alton " "..... | 27,008 |
| <i>Whiskey.</i> | |
| From the Missouri river, bbls..... | 291 |
| From the Illinois " "..... | 20,335 |
| From Alton " "..... | 7,860 |
| <i>Corn.</i> | |
| From the Missouri river, sacks..... | 31,378 |
| From the Illinois " "..... | 163,813 |
| From Alton " "..... | 57,862 |
| <i>Oats.</i> | |
| From the Missouri river, sacks..... | 3,910 |
| From the Illinois " "..... | 121,939 |
| From Alton " "..... | 47,548 |
| <i>Wheat.</i> | |
| From the Missouri river, sacks..... | 104,817 |
| From the Illinois " "..... | 455,612 |
| From Alton " "..... | 42,390 |
| <i>Hogs.</i> | |
| From the Missouri river..... | 4,350 |
| From the Illinois " "..... | 2,679 |
| From Alton " "..... | 10,436 |
| <i>Hay.</i> | |
| From the Missouri river, bales..... | — |
| From the Illinois " "..... | 7,069 |
| From Alton " "..... | 6,573 |
| <i>Potatoes.</i> | |
| From the Missouri river, sacks..... | 675 |
| From the Illinois " "..... | 11,113 |
| From Alton " "..... | 43,489 |
| <i>Horses.</i> | |
| From the Missouri river..... | 231 |
| From the Illinois " "..... | 214 |
| From Alton " "..... | 383 |
| <i>Cooperage.</i> | |
| From the Missouri river, pieces..... | 16,140 |
| From the Illinois " "..... | 34,296 |
| From Alton " "..... | 23,203 |

Cleveland and Pittsburgh Railroad.

We have the sixth annual report of this company, and learn that the entire earnings of the road for the year ending December 31, 1853,

| | |
|--|----------------|
| were..... | \$432,682 46 |
| And the cost of operating..... | 165,404 68 |
| Leaving net earnings..... | \$267,277 78 |
| The present amount of stock is.... | \$1,979,100 00 |
| The funded debt..... | 1,142,200 00 |
| Balance of temporary bonds and other accounts..... | 158,608 29 |

Total of receipts and expenditures..... \$3,279,908 29

Of the stock as above stated \$218,000 were issued as a loan to the Tuscarawas extension, leaving \$1,761,000 invested in the main line.

The Tuscarawas extension leaves the main line at Bayard and will run 31.1 miles to New Philadelphia. The estimated cost of Road-bed and superstructure is \$624,985 25. Six miles have been opened and six more are laid with iron, while nearly all the grading is finished. The estimate of work unfinished is \$42,797 58, which added to the amount expended falls nearly \$30,000 below the estimated cost.

Of the Beaver and Wheeling extensions, the former is 22¼ miles in length, from Wellsville to Rochester, and the latter 41 miles from Wellsville

to Bridgeport. The Beaver extension is estimated to cost \$515,657 67, and the Wheeling extension \$740,169 29. The amount expended for graduation on the Wheeling line, to Dec. 31, 1853 was estimated at \$108,416 89. The amount expended on the Beaver line was \$50,923 68.

Annual Report of the South Carolina Railroad.

The Charleston papers contain the annual report of the President of the Charleston and Hamburg Railroad, including the Columbia branch. According to the report, the income for the year from—

| | |
|---|----------------|
| Passage, freight, mails, etc..... | \$1,215,279 21 |
| And the expenses of the management, ordinary and extraordinary, (the ordinary equal to 43 per cent.)..... | 555,536 88 |
| Leaving a balance of..... | 663,742 33 |
| Out of which have been provided interest on foreign and domestic debt, and for claims for damages, etc..... | 199,773 72 |

And the remainder..... 463,968 61

Has afforded two dividends of 4 per cent. each, amounting to..... 311,376 00

And transferred a balance of..... \$152,592 61

To the credit of surplus income for the year. Mr. Caldwell, the President of the company, says the road will require extensive improvements during the present year. The injuries done to the Columbia branch, near the Congaree, by the freshets of 1852, have not yet been fully repaired. The President adds:

"During the past year the Savannah river at Augusta has been crossed; its beneficial influence upon our business has been already sensibly felt, and we confidently look for a larger future accession to it, and for an increasing social and commercial intercourse between the two States. Our affairs have been conducted there with regularity and despatch."

Finances of the City of New York.

The operations in the sinking fund for the redemption of the city debt were as follows, during the year ending July 31, 1853:

| | |
|----------------------------|--------------|
| Receipts..... | \$743,299 52 |
| Balance, Aug. 1, 1852..... | 713,292 41 |

\$1,456,591 93

Redemption of water loans..... \$799,850 00

Invested in fire indemnity stock.... 600,000 00

26,718 43

1,426,568 43

Balance on hand, Aug. 1, 1853..... \$30,023 50

The operations in the sinking fund for the payment of interest of the city debt are as follows:

Receipts..... \$933,191 32

Balance, Aug. 1, 1852..... 398,162 35

\$1,331,353 67

Paid interest..... \$776,977 88

Redeemed revenue bonds..... 200,000 00

976,977 88

Balance on hand Aug. 1, 1853..... \$354,375 79

Total city debt Aug. 1, 1853..... \$18,960,856 00

Of which have been repurchased..... \$3,692,548 00

Also securities..... 942,490 22

\$4,635,038 22

Debt unprovided for..... \$9,325,817 78

The total receipts of the year ending Dec. 31,

1853, were \$8,823,857 17; expenditures, \$7,927,740 88; excess of receipts, \$896,110 20. The assets in the hands of the city amount to \$4,601,167 18; besides a sinking fund of \$484,969 33.

The assessed value of the real and personal property of the city in the years 1852 and 1853 was as follows:

| | 1852. | 1853. | Increase. |
|----------------------------|---------------|--------------|-----------|
| Real estate, \$253,186,753 | \$294,652,795 | \$41,466,042 | |
| Personal " 98,520,042 | 119,034,137 | 20,514,095 | |
| Total, \$351,706,795 | \$413,686,932 | \$61,980,137 | |

Trade of Oswego.

The receipts of flour, wheat and lumber, from Canada, for three seasons, compare as follows:

| | 1851. | 1852. | 1853. |
|-----------------|------------|------------|-------------|
| Flour, bbls.... | 259,875 | 193,190 | 113,007 |
| Wheat, bu.... | 676,803 | 1,362,482 | 1,781,158 |
| Lumber, ft.... | 62,527,843 | 75,500,000 | 123,535,747 |

The following statement shows the quantity of flour, wheat and lumber received at Oswego and Buffalo during the year 1853, with the total of both:

| | Oswego. | Buffalo. | Total. |
|---------------|-------------|------------|-------------|
| Flour, bbls.. | 391,215 | 975,557 | 1,366,772 |
| Wheat, bu.. | 7,436,391 | 5,424,048 | 12,860,434 |
| Lumber, ft.. | 135,434,235 | 80,295,789 | 224,729,024 |

Comparative statement of the total tonnage of property cleared from, and received at, Oswego, by canal, for three seasons:

| | 1851. | 1852. | 1853. |
|---------------|---------|---------|---------|
| Cleared..... | 395,447 | 400,695 | 495,552 |
| Received..... | 180,715 | 179,415 | 221,469 |

Total No. tons... 576,162 580,110 717,013

Comparative statement of the total value of property shipped from, and received at, Oswego, by canal, for two seasons:

| | 1852. | 1853. |
|------------------------|--------------|--------------|
| Property cleared..... | \$10,746,037 | \$14,211,098 |
| Property received..... | 16,415,334 | 20,265,064 |

Total value..... \$27,161,371 \$34,476,162

Comparative statement of tolls collected at Oswego, for two seasons:

| | |
|-----------|--------------|
| 1853..... | \$392,730 71 |
| 1852..... | 314,436 88 |

Increase in 1853..... \$78,293 83

Terre Haute and Richmond Railroad.

The income of the company for the last fiscal year, ending Dec. 31, 1853, is as follows:

| | |
|--------------------------|--------------|
| Passengers..... | \$109,130 96 |
| Freights..... | 58,244 70 |
| Mails and Expresses..... | 10,600 31 |

Total receipts..... \$177,975 97

Expenditures for operating and repairs of road..... 66,331 37

Nett earnings, 1853..... \$111,644 60

Nett earnings, 1852..... 71,466 05

Increase..... \$40,178 55

Number of through passengers..... 32,155

Number of way passengers... 56,666

Total number of passengers... 88,821

Number of miles run by passenger train..... 50,306

Number of miles run by freight train..... 47,020

Number of miles run by Gravel and ditching trains..... 32,139

Total number of miles run..... 129,465

GENERAL ACCOUNT.

| | |
|---|----------------|
| Dr. | |
| Construction..... | \$1,414,284.50 |
| Union depot and track..... | 21,241.45 |
| | \$1,435,525.95 |
| Bills receivable..... | 9,504.20 |
| Mail transportation..... | 1,825.00 |
| Due from other roads..... | 4,091.06 |
| Vigo county bonds..... | 11,400.00 |
| Treasurer, (cash on hand) | 8,240.83 |
| | 1470587.04 |
| Cr. | |
| Capital stock..... | \$738,650.00 |
| Seven per cent. bonds..... | 600,000.00 |
| Six per cent. bonds..... | 28,600.00 |
| | \$1,367,250.00 |
| Certificates of interest on stock, outstanding..... | 484.86 |
| Bills payable..... | 38,774.20 |
| Dividends unpaid..... | 864.63 |
| Dividend, No. 3..... | 29,546.00 |
| Sundry Accounts..... | 4,962.32 |
| Surplus..... | 28,705.03 |
| | 1470587.04 |

Trade of New York Canals.

The following table shows the receipts from tolls on all the canals of the State, for the fiscal year ending on the 30th day of September, 1853:

| | |
|---|----------------|
| Erie canal..... | \$2,833,970 70 |
| Champlain canal..... | 120,998 05 |
| Oswego canal..... | 97,297 99 |
| Cayuga and Seneca canal..... | 24,849 59 |
| Chemung canal..... | 19,603 18 |
| Crooked Lake canal..... | 1,391 06 |
| Chenango canal..... | 20,208 18 |
| Genesee Valley canal..... | 31,230 71 |
| Oneida Lake canal..... | 11,571 67 |
| Black River canal..... | 4,648 71 |
| Cayuga Inlet and Baldwinsville canal..... | 1,127 42 |
| Oneida River Improvement..... | 37,630 47 |

Total..... \$3,204,718 05

The receipts from tolls during the past three years were as follows:

| | |
|-----------|----------------|
| 1851..... | \$3,329,304 60 |
| 1852..... | 3,118,244 39 |
| 1853..... | 3,204,718 05 |

There are 887 miles of completed, and 65 miles of uncompleted canals in the State. The total tonnage that has passed over the canals is 3,052,251 tons, showing an increase over 1852 of 295,908 tons; over 1851 of 607,145 tons.

1852. 1853.

The value of property arriving at tide water... \$66,898,102 \$74,643,061
Value of property going from tide water..... 118,896,444 114,890,801

Total..... \$185,794,546 \$188,533,862
Increase over 1852..... \$2,744,316

The following were the expenditures of all kinds during the fiscal year; also from the 30th September to date:

| | | |
|---------------------------|-------------|----------------|
| | 1853. | From Sept. 30. |
| Erie canal..... | \$39,685 19 | \$12,092 17 |
| Erie canal enlargement.. | 501,113 11 | 209,357 20 |
| Black River canal..... | 27,798 73 | 16,011 40 |
| Genesee Valley canal..... | 120,116 38 | 43,334 23 |
| Champlain canal..... | 2,217 55 | 1,237 55 |
| Oswego canal..... | 230,375 53 | 69,997 38 |
| Chenango canal..... | 254 16 | 650 00 |
| Chemung canal..... | 5,985 45 | 75 00 |
| Chemung canal feeder... | 6,877 29 | |
| Cayuga and Seneca canal | 14,323 25 | 18,580 00 |
| Baldwinsville canal..... | 2,982 33 | |

Total..... \$951,725 07 \$371,281 98

The amount expended during the year 1852 was \$824,533 63, and for the past fourteen years, \$8,116,121 65.

Alabama and Tennessee Railroad.

The annual report of this company, presented to the Stockholders on Dec. 5. 1853, gives the following general facts relative to the progress and condition of their work.

On the fourth of July last the road was opened to Montevallo, 55½ miles from Selma. From Montevallo to the East bank of Coosa river, 29¾ miles, the grading and masonry are under contract to be finished by the first of July next. From Coosa to Gadsden, 82¾ miles, all but 24¾ miles are under contract.

From Selma to Montevallo the graduation, masonry, bridging and superstructure have cost \$571,804 26, or \$10,334 43 per mile. The amount expended for depots, equipment, engineering &c., is \$145,272 51. From Montevallo to Coosa river, including the bridge across Coosa, it is estimated to require for graduation, bridging, masonry and superstructure \$527,841, of which \$122,051 have been paid in cash and stock, leaving \$405,790 to be expended.

From Coosa to Gadsden the estimate for the roadway, including the same items as specified for the other division, is \$606,695, of which \$165,662 have been paid, leaving \$441,033 to be applied to that portion of the work.

The earnings of the road in operation up to November 1st, 1853, were \$37,535 61, the expenses \$31,889 57, leaving net earnings of \$5,646 04. Besides these, the road has done a business in transportation of materials for construction, for which \$21,312 have been charged.

| | |
|------------------------------------|--------------|
| The road has received in cash on | |
| subscriptions..... | \$450,704 94 |
| From State, in cash..... | 178,016 24 |
| Contracts in Stock, estimated..... | 87,021 00 |
| Donated lands from individuals.... | 13,000 00 |
| | \$728,742 18 |

| | |
|---|--------------|
| Sales of Bonds, 500 of Railroad and 50 of Selma city..... | \$512,494 12 |
| Discounts, commissions, &c..... | 37,505 88 |
| | 550,000 00 |

| | |
|-------------------------|----------------|
| Bonds to be issued..... | \$338,450 00 |
| Selma city Bonds due... | 35,000 00 |
| Stock subscriptions due | 517,844 06 |
| | 891,294 06 |
| | \$2,170,036 24 |

| | |
|---|-------------|
| The entire road from Selma to Gadsden is estimated to cost, equipped..... | \$2,900,000 |
| Of which there remains to be raised..... | 948,345. |
| Of this sum there can be obtained on bonds unissued..... | \$338,450 |
| And it is proposed to obtain a State loan of... | 500,000 |
| | \$838,450 |

| | |
|--|---------|
| Adding balances due on work in progress..... | 170,575 |
|--|---------|

| | |
|--|-----------|
| Leaving to be raised from other sources..... | \$280,470 |
|--|-----------|

It is believed that by suitable exertions this last sum can be raised by individual subscription; while the company might also reasonably hope to receive subscriptions from counties in the incorporate capacity, in view of the aid of this character which has been extended, both by counties in Ala-

bama and in other States, to similar enterprises. The value of real estate in the counties intersected by the Alabama and Tennessee railroad has been enhanced as much as the most zealous friends of the latter have ever anticipated.

The prospects of this road, are not, of course, to be measured by its present condition. Being only in the intermediate stages of construction it has not yet attained a position to accomplish results.

The discharge of the productions of the country which it has now reached, is periodical, not continuous. The heavy down business of last winter was forced into other outlets, in the absence of the railroad facilities which this work is just beginning to supply. Its opening to Montevallo, consequently, in July, was not contemporary with the flood of that tide which must, hereafter, flow with successively increasing volume through this channel. And again, the early date of the Report conceals the results of the business which is seeking the road at the present time.

But, that the road is destined to do an important business, there can be no doubt. It runs through a country abundant in natural resources, and has already reached a stage where these will become available. And it will command yet more important points before the next periodical flow of freight, by the extension of the road across the Coosa river. This is expected to be completed in September of this year. Besides the agricultural interest, at present the most important in Alabama, the coal, iron and lime accessible in Bibb and Shelby counties will soon become an important addition to the business of the road, and such as will be nearly continuous in movement throughout the year.

While this road has availed itself of those features of its route naturally favorable for cheap construction, it has been built in the most permanent manner, such as is characteristic of Northern roads. Much of the work has been done in "working out" stock subscriptions, by men whose homes and property are contiguous to the road. Indeed, both the capital and labor for the construction of the work have been well supplied from local resources, and when the road shall have been completed its bonds will be secured by an investment upon which nearly three times their whole amount has been economically and profitably expended.

Looking to the time when, besides the full development of its local resources, the Alabama and Tennessee railroad shall have completed its ultimate connections, and thereby secured its important position in the great lines of railroad connecting all the Northern and [the most important of the Western States and cities with Mobile and New Orleans, it may be safely said that no other part of these lines coincides more nearly with the natural direction of the trade which they aim to control, none upon which a larger or better business can be created, and few which have better facilities for cheap and expeditious operation and consequently with these combined advantages, a better promise to their stockholders.

Profits of Locomotive Building in the West.

The Menomonee Machine Shop, a small establishment in Milwaukee which has built most of the Equipment of the Milwaukee and Mississippi road, has declared a dividend to the stockholders, to the amount of 20 per cent. on the capital paid in.

Concentration of Power, as applied to the leading New England roads.

BY ZERAH COLBURN.

In the progress of railroads there has been a natural tendency to increase the capacity of the motive power, by which is understood an increase in the dimensions of the steam generating and steam consuming parts of the locomotive, and necessarily an increase of weight. But this tendency must soon find a limit, with a given construction of locomotive, in the *economical resistance* of the rails. The original locomotive had but a single pair of driving wheels, these being all that were then required to support half the engine and to afford the necessary adhesion. And although the weight of the locomotive has been since increased three or four hundred per cent, this general principle of the distribution of weight still governs the construction of passenger engines in England. Engines having from 11,000 to 14,000 lbs. upon a single driving wheel, and with some classes of engines, as much as 12,800 lbs. upon a single leading wheel, are not uncommon. For the ordinary class of express engines, a weight of 12,500 lbs. on each driving wheel is a common allowance. Every effort has been made to increase the *speed* of these engines, while from this reason and the increase of traffic, a much greater number of engines has been run than formerly. Hence the destruction of rails and road-bed which was originally measured by years is now the work of months or weeks. Indeed, by 1847, the "depreciation of permanent way" had become so alarming in England that stockholders begun seriously to doubt the value of their investments, and this as much as any other cause, disclosed the fatal results of the over construction of railways in Great Britain.

As a reaction upon this system a number of engineers at once advocated the use of "light engines", and many were built and tested, which under good circumstances performed well for trains of corresponding weight. But from the absence of that *surplus of power* which an important equipment of locomotives always requires, to be *reliable* under all circumstances, it was soon shown that the *power* must still maintain an ascertained ratio to the *resistance*, and that the essential parts of the engine could not be altered so as to involve much less absolute weight than before.

Yet it was true that, by the system of motive power partially established in our own country, a considerable reduction of weight for a given power could be made, while the absolute weight could be *distributed*, so that it should not exceed a minimum upon a single point. These important results were attained in the use of the "outside connection" of the piston and crank, and in the "coupled drivers". These two features were distinctive and might be claimed as the basis of the American system of motive power.

On many of the roads in this country, however, a construction of engine which was a *mean* between the extremes of both systems, had become generally established. This was the eight wheel plan, having two pairs of connected drivers and a truck frame. It was such a plan as was suited for the heavy passenger business of any road, but which, without possessing the merits of adaptation, had been also impressed into freight service. Where it was combined with the "inside connection" the power could not be materially increased

without involving considerable concentration of weight, and the result was an approach to those which had proved so disastrous in England. But while the result was nearly the same it was differently manifested. Instead of concentrating our power by the desperate English means of a concentration of weight, our engines were kept at the ordinary limits imposed by the double crank, and by that of "four tons to a wheel", while to make up for this deficiency, as a matter of course, a greater number of engines had to be employed. The first reaction of the English system extended to our own, and many railroad men were content to believe that "light and frequent trains" were the true conservators of economical operation.

While I shall hereafter show all the advantages which can be claimed for the system last named, I shall now proceed to examine the *cost* of its application to the working of interior roads, and those relying upon a *through* business. I shall also show its operation on undulating roads having severe grades.

The system will be considered especially with reference to working freight.

The *cost* of transportation governs the profits both of transporting and often those upon the articles transported. The cost of railroad transportation is increased less with the capacity of motive power and of trains than with the *number and mileage of engines*, and the *speed* at which they are worked. The chief items, forming much more than one-half, of the cost of running trains are the repairs of road, repairs of engines, wages of engine and train hands, and fuel. For instance, in 1852 the cost of running a freight train of 222 tons, or 73 tons of freight, for 100 miles upon the Erie road was as follows

| | |
|---------------------------------|---------|
| Cost of maintaining way..... | \$12 19 |
| Repairs of locomotives..... | 7 52 |
| Engine and train hands..... | 12 70 |
| Fuel and cost of preparing..... | 13 87 |
| Oil for engines..... | 2 19 |

\$48 47

All other expenses..... 25 32

Total.....\$73 79

Again, the transportation of freight upon the Baltimore and Ohio road, for the year 1852, shows the following result per ton per mile:

| | |
|------------------------------------|-----------|
| Repairs of road and bridges..... | 295 cent. |
| " engines..... | 104 " |
| Wood and coal including labor..... | 094 " |
| Oil and waste for engines..... | 036 " |
| Engine and train hands..... | 161 " |

690 "

*All other expenses.....243 "

933 "

* It is necessary, before proceeding any farther, to state that although the power or capacity of the Baltimore and Ohio engines is greater than that of the Erie engines, yet the grades and curves of the former road are so severe as to offset the advantages of concentrated power. The whole expense per ton moved, of operating the engines and maintaining the road are generally no greater upon the Baltimore and Ohio road than upon the Erie; in fact, a portion of these expenses is less; but from the different character of much of the freight moved on the former road, and the better construction of freight cars, the expenses, other than those of the road and engines, are much less, so that the first class of expenses, although not absolutely greater than on the Erie road, is *relatively* so.

Of that class of expenses which I have shown to form from one-half to three-fourths of the whole cost of moving freight, the increase is not proportional to the capacity of the engine or trains, but is almost wholly dependent on their number and mileage, more especially upon their *number*.

The wear of road and bridges is caused, to a great extent, by the locomotive, the weight on the wheels of which is twice per wheel of those of the cars, while the engine has to *force* itself over the rails by its *adhesion*, instead of being *drawn*. Again, the engine, being at the head of the train, gives the *blow* which first disturbs the resistance of the rails and road bed. Except the weight be excessive upon a *single* wheel, a great part of the wear would be no more with an engine of thirty tons weight, than with another of twenty. With the same engine, however, the wear is increased in a rapid proportion to the *speed*, while the useful load is at the same time diminished.

The wear of engines is well known to be more in proportion to the number and disposition of their parts, than to their size. There is so much room to reduce the cost of repairs of freight engines by using the outside connection, iron tubes, chilled tire, etc., that a great increase of power could be obtained with these advantages without increasing the ruling rates of engine repairs. In practice, those roads which use the heaviest eight or ten driver-engines, conduct their repairs the cheapest.

Fuel is not consumed, in practice, in proportion to the expenditure of steam. A very large proportion of fuel is almost necessarily *wasted*; being lost in getting up steam, in waiting at stations, by blowing off steam, by priming, by leakage in the boilers, by condensation of steam, by the entrance of cold air in firing, and by other causes, nearly all of which sources of loss are exactly proportionate to the number of engines. The carelessness, and consequently the waste of firemen is proportionate to their number.

So with oil and waste, the expenses for which are nearly proportional to the number of parts to which they are applied, and the *number of hands applying them*.

The wages of enginemen and firemen are almost exactly in proportion to the number of engines.

The number of train hands is nearly in proportion to the number of trains run. One conductor is required on every train, no matter how short; a single brakeman can control more brakes on a long train, while every train requires one brakeman on the last car.

The capital invested in engines, engine houses, turn tables, turn outs, shops and stationary machinery, and very often in second track, is nearly proportional to the number of engines used. While the destructive, and often fatal results of *accidents*, increase, under a given system, in a close proportion to the frequency of trains.

In comparing the expenses of heavy against

By "a better construction of freight car," I mean that those of the Baltimore and Ohio Railroad have outside bearings which permit the use of oil tight boxes, and a consequent great saving in removing boxes and in oiling. These cars have also a "through draw rod," by which the whole train is connected by a continuous iron bolt, and no car is strained beyond its own weight. Again, the narrower gauge of the Baltimore road saves something in wear of wheels and axles, especially on curves of equal radii on both roads.

light engines; or engines intended for slow speeds with those which run at a rapid rate, the usual reference to the "miles run" is not correct, as the heavy or the slow engine does perhaps *twice the work*, and therefore *earns twice as much per mile* as would the other engines in the same distance. If it costs \$1 00, per mile run, by trains carrying 200 tons of freight, and it costs 67 cents for trains carrying 50 tons, the full train is of course the cheapest.

If a large proportion of power is to be absorbed by heavy and continuous grades, such as cannot easily be surmounted by a moderate increase of pressure or reduction of speed, then engines of greater power should be used instead of dividing the trains. An undulating road with severe grades, and aiming to control a heavy business, must be equipped throughout with what I have termed concentrated power.

I have been thus particular in stating the general principles which control the cost of freight transportation, because there are so many roads in New England which stand so palpably in need of their application. A large share of the soundest and most essential capital of that section has been invested in great lines of railroads, aiming to secure a western business, besides the development of a local trade. These roads have encountered natural difficulties such as cannot be profitably controlled except by concentrated power.

The Western R.R. of Mass., for example, has a rise and fall of over 3500 ft. in a length of 156 miles. It has, besides others, three summits, respectively 906 $\frac{3}{4}$, 1456 $\frac{1}{2}$, and 954 $\frac{1}{2}$ feet above the base line of the road. There are, in all, 224 planes. Of the entire length, 22,924 miles, or 15 per cent., are on grades of between 50 and 83 feet rise per mile, while 88-365 miles, or 57 per cent., are inclined above 80 feet per mile. There is a continuous grade of 74 feet per mile for 5 $\frac{3}{8}$ miles; one of 79 feet per mile for 4 $\frac{1}{8}$ miles; and one of 83 feet per mile for 1 $\frac{1}{2}$ miles.

The standard freight engine of the Western road is "inside connected"; has 16 by 20 inch cylinders; 4 $\frac{1}{2}$ feet wheels; weighs 23 tons and has about 4 tons to each driving wheel. It expends 3,481 cubic feet of steam per mile; the ultimate power being equal to about 650 tons on a level, or 130 tons on an 83 feet grade. 130 tons is about the weight of eight eight-wheel cars, well loaded, and this is all that could be drawn over such grades by these engines, without an average pressure of steam in the cylinder of more than 75 pounds per square inch, and an adhesion greater than two-ninths of the driving wheels. In the months, during which the motive power is in the fullest use this amount of adhesion cannot be always relied on except by an injurious use of sand.

The cost of moving one ton one mile upon the Western road has averaged, for several years, 1.4 cts. The charge has been 2.8 cts. per mile. The following table shows the tonnage for each year since 1846, and the receipts from freight,

| Year. | Tons moved one mile. | Rechts. from freight, | Receipts per ton per mile |
|-------|----------------------|-----------------------|---------------------------|
| 1847 | 28,087,628 | \$785,345 66 | 2.8 |
| 1848 | 24,656,129 | 745,909 76 | 3.02 |
| 1849 | 25,307,146 | 745,393 81 | 2.9 |
| 1850 | 25,206,308 | 740,493 53 | 2.9 |
| 1851 | 23,304,050 | 714,362 92 | 3.06 |
| 1852 | 23,724,070 | 685,062 85 | 2.9 |
| 1853 | 28,153,554 | 786,215 87 | 2.8 |

It has been the continual effort of those interested in New England roads to devise means for attracting to them the great through business, for which the natural water routes at their western termini are successful competitors. The only plans which have been urged were the construction of roads with easier grades and less distance and the adoption of lower charges for freight. But upon the Reading road, having the most favorable grade for cheap transportation, the concentration of power, or use of heavy engines has been carried to great extent, and has been one of the most important means of reducing the cost of carriage. Ninety cars carrying 475 tons (of 2,000 lbs.) of coal is the usual load for the latest class of engines upon this road.

By the other proposed system of lower charges what would be gained? More business would offer, and more engines of the present kind would be required to do it. The wear of road and machinery, and the expenses of the operating force and of fuel, oil etc., would be increased, nearly in proportion. Allowing the increase of business this result must follow.

In the mean time the through business moving Eastward on New England roads is rapidly falling off. That of the Western road was but one half in 1852 what it was in 1847. In 1853 an improvement occurred in the amount of business, but the charges and the cost remained substantially the same per ton.

If this road, by a different system of motive power could operate maximum trains, say of 100 tons of freight, they might reduce the cost to 1 cent and the charge to 2 cents per ton of freight per mile. Instead of 28,153,554 tons of freight moved one mile in 1853, 39,310,793 tons could have been moved, an increase of about 40 per cent. With this increase of freight the road could afford to receive even a less proportion of profit on its transportation, by reason of the *travel* which would be thereby attracted.

But it will be said that the business of the Western road has long been below the capacity of their engines. This is only true in *averaging* the weight of trains in a year's business, in which the result is aggravated by the preponderance of Eastward bound freight, which last year was twice that of the Westward bound freight. On the Reading road the coal cars are are wholly empty in returning, and yet the trains the other way are fully up to the capacity of the motive power.

The freight trains moving East on the Western road, in the summer and fall months are certainly as heavy as the engines can control, and the press of business is such that frequent trains are run; showing conclusively that the important business is not below the capacity of the engines.—Indeed, looking at the physical features of the Western Railroad, and to the vast business which it seeks to control, all of which is contested by shorter and naturally cheaper routes, it is undeniable that the motive power of this road is decidedly of an inferior character in point of capacity.

The means of economical increase of capacity must lie in the simplest construction of machinery and especially in the distribution of the weight thereof. The Western railroad equipment could be changed for freight engines having 18 by 24 inch cylinders and 54 inch wheels, weighing 30 tons, and having three fourths of that weight for adhesion,

there being six connected drivers and a truck frame; the whole power being 60 per cent. greater, while the weight on each wheel would be the same. It is not necessary to discuss the details of such engines as these general proportions and arrangements are already in successful use on some of the leading freight roads in the world.

The adaptation of power for most roads has been determined more by the preferences of the builders than upon any other authority. For instance, the motive power of the Western road is substantially that of all of the other roads in Massachusetts, New Hampshire and a part of Vermont, and without any especial reference to length of road, grades, curves, or character of traffic. The doctrine of "light and frequent trains," applicable only to the suburban passenger communication of a metropolis, being ruinous for any interior road aiming at a heavy business, and especially at a through trade,—a doctrine established in the circumstances enumerated at the commencement of this article, has materially influenced the cost of transportation on New England roads, and directly benefitted those rivals which seek the New York Market.

As a necessary and only means of reducing the cost of freight transportation on New England roads, and of arresting the rapid decline of their foreign business, a prompt and judicious application is necessary of the principles of concentration of power.

Improvement of the Red River.

The work of blowing out the falls at Alexandria has been commenced. The plan adopted by the contractors, is to deposit a tin canister, by means of a rope and guiding rod, on the surface of the rock to be removed, containing from 50 to 150 lbs. of powder. To this is attached a wire, connected with a galvanic battery, which, at the pleasure of the operators, fires the powder. The explosion shatters the rock beneath, and the process is repeated until the concussions have displaced the rock to the desired depth. Neither drilling, dredging, nor dragging is employed. The channel will be made from 40 to 60 feet wide, instead of 30 feet, as before reported; but even from 40 to 60 feet will be too protracted for steamboat navigation. The softness of the rock and low stage of the water act as slight drawbacks on operations, but good progress is made with the work. A channel will first be blasted through the lower rapids, and the effect on the river above be ascertained, before going to work on the impediments above.—*Shreveport Southwestern.*

The contractor is Professor Maillifert, who blasted out the rocks at "Hell Gate" in New York harbor.

Pennsylvania Railroad Tunnel.

The tunnel which has just been completed on the line of the Pennsylvania Central Railroad passes through the summit of the Alleghany Mountains at a point known as Sugar Run Gap. It lies in the counties of Blair and Cambria—the summit being the dividing line. It is 3,612 feet long, 2,685 feet of which is arched, containing 7,700 perches of cut stone and 6,400 perches of brick masonry, and 927 feet is cut through the solid rock where arching is unnecessary. Eight feet of the arch on each side is built of cut stones 22 $\frac{1}{2}$ inches thick, resting on abutments of rock range work of the same thickness, and the crown consists of five courses of hard burnt brick—the whole laid with hydraulic cement. At grade, the width of the tunnel in the clear is 21 feet—ten feet above the grade, 24 feet. The height above the grade is 23 feet.—The greatest elevation above tide is at the west end of the tunnel, where the height is 2,161 feet. The grades ascending the eastern slope commence at

Altona, and in a distance of 12 miles, where the west end of the tunnel commences, the height overcome is 993 feet, or 82¾ feet to the mile.

American Railroad Journal.

Saturday, February 15, 1854.

Stock and Money Market.

The share market shows a slight improvement since our last issue. Everything dances attendance upon the Eastern question. The last steamer reports were regarded as more favorable than those of the preceding. It is useless, however, to expect that any active demand can spring up for our securities, till peace, or war is determined upon. Either event by putting an end to a period of suspense, would probably help matters on this side. In the securities of new works next to nothing is doing. Money is easy on call, and sufficiently abundant in the business channels, and is daily becoming more so from the absence of speculative movements.

E. F. JOHNSON UPON THE PACIFIC RAILROAD.

We have published, and have for sale, E. F. Johnson's recent work upon the Pacific Railroad. Mr. Johnson is admitted to be one of the first Engineers in this country, and his reputation is a good guaranty that the subject under discussion has been thoroughly considered and discussed. The work is illustrated by a large map, showing all the proposed routes, a profile of the Northern Route, a map of the mountain chain traversed by it, and seven lithographic views of various points upon its line. The whole work is elegantly got up, and makes a volume of 176 Pages, Octavo.

Persons wishing to procure copies of the above work, by forwarding one dollar to our address, can have a copy of the same with the maps, forwarded by mail post paid.

Central Ohio Railroad.

This company, as we learn, have contracted for 24 additional engines, to be delivered, all, previous to January 31st, 1855. This will make 41 with those now in use. The estimated amount of graduation uncompleted in October last, was \$464,000. The road is expected to be opened to Cambridge, 50 miles from the Ohio river, by March.

Artesian Wells.

At Selma, the Alabama and Tennessee Railroad Company have dug an artesian well for the supply of water for their engines. This well discharges 240 gallons of water per minute, at a height of 22 feet. An attempt was made to bore an artesian well on the line of the road, 32 miles from Selma, but without success.

Debt of San Francisco.

The funded debt of San Francisco is \$1,500,000 and the California Legislature will probably pass a law authorizing its liquidation so fast as means can be accumulated for the purpose. The floating debt, over \$490,000, the city has already taken means to pay by the sale of city property valued at near \$700,000.

Mobile and Ohio Railroad.

We learn that the Legislature of Alabama has voted to make a loan to the above road to the amount of \$400,000.

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

| NAME OF COMPANY. | Miles open. | Capital paid in. | Funded debt. | Tot. cost of road and equip't. | Gross Earnings for last official year. | Net Earnings for last official yr. | Dividen ^d for do | Price of Shares |
|-------------------------------------|-------------|------------------|--------------|--------------------------------|--|------------------------------------|-----------------------------|-----------------|
| Atlantic and St. Lawrence... Maine. | 150 | 1,538,100 | 2,978,700 | 5,150,278 | 254,743 | 118,520 | none | 83 |
| Androscoggin and Kennebec.. | 55 | 809,878 | 1,016,500 | 2,064,458 | 140,561 | 80,053 | none | 80 |
| Kennebec and Portland..... | 72 | 952,621 | 291,80 | 2,514,067 | 168,114 | 100,552 | none | 41 |
| Port., Saco and Portsmouth.. | 51 | 1,355,500 | 123,884 | 1,459,384 | 208,669 | ..... | 6 | 964 |
| York and Cumberland..... | 20 | 285,747 | 341,100 | 713,605 | 23,946 | 11,256 | none | 24 |
| Boston, Concord and Montreal. N. H. | 93 | 1,649,278 | 622,200 | 2,540,217 | 150,538 | 79,659 | none | 83 |
| Concord | 35 | 1,485,000 | none. | 1,485,000 | 305,805 | 141,836 | 8 | 1114 |
| Cheshire | 54 | 2,078,625 | 720,900 | 3,002,094 | 287,768 | 55,266 | 5 | 38 |
| Northern | 82 | 3,016,634 | ..... | ..... | 328,782 | 163,075 | 5 | 59 |
| Manchester and Lawrence.... | 24 | 717,543 | ..... | ..... | ..... | ..... | 6 | 90 |
| Nashua and Lowell..... | 15 | 600,000 | none. | 651,214 | 132,545 | 51,513 | 8 | 106 |
| Portsmouth and Concord.... | 47 | ..... | 1,400,000 | ..... | ..... | ..... | none | ..... |
| Sullivan..... | 26 | ..... | 673,500 | ..... | ..... | ..... | none | 21 |
| Connecticut and Passumpsic.. Vt. | 61 | 1,097,600 | 550,000 | 1,745,516 | ..... | ..... | none | 30 |
| Rutland | 120 | 2,486,000 | 2,429,100 | 5,577,467 | 495,397 | 266,539 | none | 11 |
| Vermont Central..... | 117 | 8,500,000 | 3,500,000 | 12,000,000 | ..... | ..... | ..... | 13 |
| Vermont and Canada..... | 47 | 1,500,000 | ..... | 1,500,000 | Leased to | the Vt. C | ent. | 97 |
| Western Vermont..... | 51 | 392,000 | 700,000 | ..... | Recently | opened. | none | ..... |
| Vermont Valley | 24 | ..... | ..... | ..... | ..... | ..... | none | ..... |
| Boston and Lowell..... Mass. | 28 | 1,830,000 | ..... | 1,995,249 | 388,108 | 130,881 | 7 | 91 |
| Boston and Maine..... | 83 | 4,076,974 | 150,000 | 4,092,927 | 659,001 | 338,215 | 7 | 1034 |
| Boston and Providence..... | 53 | 3,160,390 | 390,000 | 3,546,214 | 469,656 | 227,434 | 6 | 84 |
| Boston and Worcester..... | 69 | 4,500,000 | 425,000 | 4,845,967 | 758,819 | 331,296 | 7 | 1004 |
| Cape Cod branch..... | 28 | 421,295 | 171,800 | 633,906 | 60,748 | 30,066 | 2 | 40 |
| Connecticut River..... | 52 | 1,591,100 | 193,500 | 1,801,946 | 229,004 | 72,028 | 5 | 55 |
| Eastern..... | 75 | 2,850,000 | 500,000 | 3,120,391 | 488,793 | 241,017 | 7 | 894 |
| Fall River..... | 42 | 1,050,000 | none. | 1,050,000 | 229,445 | 99,589 | 8 | 100 |
| Fitchburg..... | 66 | 3,540,000 | 112,305 | 3,623,073 | 574,574 | 232,787 | 6 | 914 |
| New Bedford and Taunton... | 20 | 500,000 | none. | 520,475 | 164,230 | 43,950 | 7 | 117 |
| Norfolk County..... | 26 | 547,015 | 819,743 | 1,245,927 | 67,251 | 23,415 | none | 68 |
| Old Colony..... | 45 | 1,964,070 | 282,300 | 2,293,534 | 374,897 | 122,816 | none | 924 |
| Taunton Branch..... | 12 | 250,000 | none. | 307,136 | 137,406 | 24,399 | 8 | ..... |
| Vermont and Massachusetts.. | 77 | 2,140,536 | 1,001,500 | 3,203,333 | 218,679 | 18,648 | none | 234 |
| Worcester and Nashua..... | 45 | 1,134,000 | 171,210 | 1,321,945 | 162,109 | 66,900 | 4 | 58 |
| Western | 155 | 5,150,000 | 5,319,520 | 9,953,759 | 1,525,224 | 746,736 | 7 | 97 |
| Stonington..... R. I. | 50 | ..... | 467,700 | ..... | 240,572 | 110,892 | ..... | 654 |
| Providence and Worcester... | 40 | 1,457,500 | 300,000 | 1,791,999 | 291,417 | 120,892 | 6 | 95 |
| Canal..... Conn. | 45 | 922,500 | 500,000 | 1,400,000 | ..... | ..... | 4 | 65 |
| Hartford and New Haven.... | 72 | 2,350,000 | 800,000 | 3,150,000 | 639,529 | 294,289 | 10 | 124 |
| Housatonic..... | 110 | ..... | ..... | 2,500,000 | 329,041 | 168,902 | none | ..... |
| Hartford, Prov. and Fishkill.. | 50 | ..... | ..... | In progres | 69,629 | ..... | none | ..... |
| New London, Wil. and Palmer | 66 | 558,861 | 800,000 | 1,511,111 | 114,410 | ..... | ..... | 39 |
| New York and New Haven... | 61 | 3,000,000 | 1,641,000 | 4,978,487 | 806,713 | 428,173 | 7 | 1014 |
| Naugatuck | 62 | 926,000 | 440,000 | ..... | ..... | ..... | 8 | ..... |
| New London and New Haven. | 55 | 750,500 | 650,000 | 1,380,610 | Recently | opened. | none | 52 |
| Norwich and Worcester..... | 54 | 2,121,110 | 701,600 | 2,596,488 | 267,561 | 116,965 | 4 | 574 |
| Buffalo and New York City.. N. Y. | 91 | 900,000 | 1,550,000 | 2,550,500 | Recently | opened. | none | 85 |
| Buffalo, Corning and N. York. | 132 | ..... | ..... | In progres | ..... | ..... | none | 65 |
| Buffalo and State Line..... | 69 | 879,636 | 872,000 | 1,921,270 | Recently | opened. | ..... | 130 |
| Canandaigua and Niagara F.. | 50 | ..... | ..... | In progres | ..... | ..... | ..... | ..... |
| Canandaigua and Elmira.... | 47 | 425,509 | 582,400 | 987,627 | 76,760 | 39,360 | none | 68 |
| Cayuga and Susquehanna.... | 35 | 687,000 | 400,000 | 1,070,786 | 74,241 | 23,496 | none | ..... |
| Eric, (New York and Erie).... | 464 | 10,000,000 | 24,003,865 | 33,070,863 | 4,318,962 | 1,800,181 | 7 | 794 |
| Hudson River..... | 144 | 3,740,515 | 7,046,395 | 10,527,654 | 1,063,659 | 338,783 | none | 694 |
| Harlem | 130 | 4,725,250 | 977,463 | 6,102,935 | 681,445 | 324,494 | 5 | 54 |
| Long Island..... | 95 | 1,875,148 | 516,246 | 2,446,391 | 205,068 | 44,070 | none | 324 |
| New York Central..... | 504 | 23,085,600 | 10,773,823 | 33,859,423 | ..... | ..... | ..... | 110 |
| Ogdensburg (Northern)..... | 118 | 1,579,969 | 2,969,760 | 5,133,834 | 480,137 | 195,847 | 1 | 294 |
| Oswego and Syracuse..... | 35 | 350,000 | 201,500 | 607,803 | 90,616 | 43,609 | ..... | 70 |
| Plattsburg and Montreal.... | 23 | 174,042 | 131,000 | 349,775 | Recently | opened. | none | ..... |
| Rensselaer and Saratoga.... | 25 | 610,000 | 25,000 | 774,495 | 213,078 | 96,737 | ..... | ..... |
| Rutland and Washington.... | 60 | 850,000 | 400,000 | 1,250,000 | Recently | opened. | ..... | ..... |
| Saratoga and Washington.... | 41 | 899,800 | 940,000 | 1,832,945 | 173,545 | 135,017 | none | 30 |
| Troy and Rutland..... | 32 | 237,690 | 100,000 | 329,577 | Recently | opened. | ..... | 33 |
| Troy and Boston..... | 39 | 430,936 | 700,000 | 1,043,357 | Recently | opened. | none | ..... |
| Watertown and Rome..... | 96 | 1,011,940 | 650,000 | 1,693,711 | 225,152 | 116,706 | 8 | 96 |
| Camden and Amboy..... N. J. | 65 | 1,500,000 | ..... | 4,327,499 | 1,388,385 | 478,413 | 10 | 148 |
| Morris and Essex..... | 45 | 1,022,420 | 128,000 | 1,220,325 | 149,941 | 79,252 | 7 | ..... |
| New Jersey..... | 31 | 2,197,840 | 476,000 | 3,245,720 | 603,942 | 316,259 | 10 | 131 |
| New Jersey Central..... | 63 | 986,106 | 1,500,000 | 2,379,880 | 260,899 | 124,740 | 3 | ..... |
| Cumberland Valley..... Penn. | 56 | 1,184,500 | 13,000 | 1,265,143 | 118,617 | 76,890 | 5 | ..... |
| Erie and North East..... | 20 | 600,000 | ..... | 750,000 | Recently | opened. | ..... | 125 |
| Harrisburgh and Lancaster... | 36 | 890,100 | 713,227 | 1,702,523 | 265,327 | 106,320 | 8 | ..... |
| Philadelphia and Reading.... | 95 | 6,656,332 | 10,427,800 | 17,141,987 | 2,480,626 | 1,251,987 | 7 | 76 |
| Philad., Wilmington and Balt. | 98 | 5,000,000 | 2,399,166 | 8,067,285 | 368,038 | 541,769 | 5 | 80 |

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

| NAME OF COMPANY. | Miles open. | Capital paid in. | Funded debt. | Tot. cost of road and equipm't. | Gross Earnings for last official year. | Net earnings for last official yr. | Dividend for do. | Price of shares. |
|-------------------------------------|-------------|------------------|--------------|---------------------------------|--|------------------------------------|------------------|------------------|
| Pennsylvania Central..... Penn. | 250 | 9,768,155 | 5,000,000 | 13,600,000 | 1,943,827 | 617,625 | .... | 97½ |
| Philadelphia and Trenton..... " | 30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Pennsylvania Coal Co..... " | 47 | ..... | ..... | ..... | ..... | ..... | ..... | 102½ |
| Baltimore and Ohio..... Md. | 381 | 13,118,902 | 5,677,103 | 22,254,338 | 2,033,420 | 798,193 | 7 | 58 |
| Washington branch..... " | 38 | 1,650,000 | ..... | 1,650,000 | 348,622 | 216,237 | 8 | ..... |
| Baltimore and Susquehanna.. " | 57 | ..... | ..... | ..... | 413,673 | 152,536 | ..... | ..... |
| Alexandria and Orange..... Va. | 65 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Manassas Gap..... " | 27 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Petersburgh..... " | 64 | 769,000 | 173,867 | 1,163,928 | 227,593 | 72,370 | 7 | 77 |
| Richmond and Danville..... " | 73 | 1,372,324 | 200,000 | In prog. | ..... | ..... | ..... | 70 |
| Richmond and Petersburg..... " | 22 | 685,000 | ..... | 1,100,000 | 122,861 | 74,113 | none | 40 |
| Rich., Fred. and Potomac.... " | 76 | 1,000,000 | 503,006 | 1,531,238 | 254,376 | 113,256 | 7 | 100 |
| South Side..... " | 62 | 1,357,778 | 640,000 | 2,106,467 | 62,762 | ..... | ..... | ..... |
| Virginia Central..... " | 107 | 1,673,684 | 469,150 | 2,392,215 | 210,052 | 99,077 | 10 | 50 |
| Virginia and Tennessee..... " | 73 | 2,650,091 | 707,958 | 3,545,256 | 109,268 | 42,736 | none | 98 |
| Winchester and Potomac.... " | 32 | 180,000 | 120,000 | 416,532 | 89,776 | ..... | 12 | ..... |
| Wilmington and Raleigh..... N. C. | 161 | 1,338,878 | 1,134,698 | 2,965,574 | 510,038 | 153,898 | 6 | ..... |
| Charlotte and South Carolina. S. C. | 110 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Greenville and Columbia..... " | 140 | 1,004,231 | 300,000 | In prog. | ..... | ..... | ..... | ..... |
| South Carolina..... " | 242 | 3,858,840 | 3,000,000 | 7,002,396 | 1,000,717 | 609,711 | 7 | 125 |
| Wilmington and Manchester. " | ..... | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Georgia Central..... Ga. | 191 | 3,500,000 | 418,187 | 3,465,879 | 986,074 | 535,608 | 8 | 115 |
| Georgia..... " | 211 | 4,000,000 | 1,214 | ..... | 934,424 | 456,468 | 7½ | ..... |
| Macon and Western..... " | 101 | 1,013,088 | 163,000 | 1,277,334 | 278,739 | 149,960 | 9 | 100 |
| Muscogee..... " | 71 | ..... | ..... | In prog. | 59,590 | 21,731 | ..... | ..... |
| South Western..... " | 50 | 586,887 | 150,000 | 743,525 | 129,395 | 71,535 | 8 | ..... |
| Alabama and Tennessee River Ala. | 55 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Memphis and Charleston..... " | 93 | 776,259 | 400,000 | In prog. | ..... | ..... | ..... | ..... |
| Mobile and Ohio..... " | 33 | 879,868 | ..... | In prog. | ..... | ..... | ..... | ..... |
| Montgomery and West Point. " | 88 | 688,611 | ..... | 1,330,960 | 173,542 | 76,079 | 8 | ..... |
| Southern..... Miss. | 60 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| East Tennessee and Georgia. Tenn. | 80 | 835,000 | 541,000 | In prog. | ..... | ..... | ..... | ..... |
| Nashville and Chattanooga... " | 125 | 2,093,814 | 850,000 | In prog. | ..... | ..... | ..... | ..... |
| Covington and Lexington.... Ky. | 38 | 1,430,150 | 900,000 | In prog. | ..... | ..... | ..... | 63 |
| Frankfort and Lexington.... " | 29 | 357,218 | ..... | 584,902 | 87,421 | 44,250 | ..... | 80 |
| Louisville and Frankfort.... " | 65 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Maysville and Lexington.... " | ..... | ..... | ..... | In prog. | ..... | ..... | ..... | 45 |
| Cleveland and Pittsburgh.... Ohio. | 100 | 1,979,100 | 1,142,200 | 3,279,908 | 432,682 | 267,278 | 10 | 83½ |
| Cleveland and Toledo..... " | 147 | 2,000,000 | 1,600,000 | ..... | ..... | ..... | ..... | 97½ |
| Cleveland, and Erie..... " | 95 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cleveland and Columbus.... " | 135 | 3,027,000 | 408,200 | 3,655,000 | 777,793 | 483,454 | 12 | 118 |
| Columbus, Piqua and Indiana. " | 46 | ..... | ..... | 2,000,000 | ..... | ..... | ..... | 65 |
| Columbus and Lake Erie..... " | 61 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cincinnati, Ham. and Dayton " | 60 | 2,100,000 | 500,000 | 2,659,653 | 321,793 | 200,967 | ..... | 104½ |
| Cincinnati and Marietta.... " | ..... | ..... | ..... | In prog. | ..... | ..... | ..... | 62 |
| Dayton and Western..... " | 40 | 310,000 | 550,000 | 925,000 | ..... | ..... | ..... | 75 |
| Dayton and Michigan..... " | 20 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Eaton and Hamilton..... " | 36 | ..... | ..... | ..... | ..... | ..... | ..... | 56 |
| Greenville and Miami..... " | 31 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hillsboro..... " | 37 | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Little Miami..... " | 84 | 2,668,402 | 482,000 | 3,169,733 | 667,559 | 352,133 | 10 | 109½ |
| Mansfield and Sandusky.... " | ..... | 900,000 | 1,000,000 | 1,855,000 | ..... | ..... | ..... | ..... |
| Mad River and Lake Erie.... " | 167 | 2,387,200 | 1,767,000 | 4,110,148 | 540,518 | 113,401 | ..... | 77½ |
| Ohio Central..... " | 57 | ..... | ..... | In prog. | ..... | ..... | ..... | 79 |
| Ohio and Mississippi..... " | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 87 |
| Ohio and Pennsylvania..... " | 187 | 1,750,700 | 2,450,000 | ..... | ..... | ..... | ..... | ..... |
| Ohio and Indiana..... " | ..... | ..... | ..... | In prog. | ..... | ..... | ..... | ..... |
| Scioto and Hocking Valley.. " | 44 | 750,000 | 300,000 | ..... | ..... | ..... | ..... | ..... |
| Xenia and Columbus..... " | 54 | 1,291,000 | 300,000 | 1,257,714 | 317,000 | 158,500 | 10 | 107 |
| Evansville and Illinois..... Ind. | 31 | ..... | ..... | In prog. | 237,506 | ..... | ..... | ..... |
| Indiana Central..... " | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 77½ |
| Indiana Northern..... " | 131 | ..... | ..... | ..... | ..... | ..... | ..... | 115 |
| Indianapolis and Bellefontaine " | 83 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Indianapolis and Cincinnati.. " | 90 | 1,128,486 | 1,289,000 | 1,869,932 | ..... | ..... | ..... | 87 |
| Lafayette and Indianapolis... " | 62 | ..... | ..... | ..... | ..... | ..... | ..... | 69 |
| Madison, Indianapolis & Peru " | 138 | 2,647,700 | 1,241,300 | 2,400,000 | 516,414 | 268,075 | 10 | 70 |
| Peru and Indianapolis..... " | 40 | ..... | ..... | In prog. | ..... | ..... | ..... | 65 |
| Terre Haute and Indianapolis " | 72 | 632,887 | 663,100 | 1,353,019 | 105,944 | 71,446 | 4 | 108 |
| Rock Island and Chicago..... Ill. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Chicago and Mississippi..... " | 135 | 2,400,000 | 4,000,000 | 4,600,000 | ..... | ..... | ..... | ..... |
| Illinois Central..... " | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 136 |
| Galena and Chicago..... " | 92 | 1,932,361 | 500,000 | In prog. | 473,548 | 286,152 | ..... | 122 |
| Michigan Southern and Ind. N. Mich. | 315 | 2,800,000 | 3,741,564 | 7,276,816 | 1,200,922 | 586,929 | 17 | 119½ |
| Michigan Central..... " | 282 | 4,856,700 | 3,977,563 | 8,618,505 | 1,145,598 | 582,816 | 8 | 108½ |
| Pacific..... Mo. | 38 | 1,000,000 | none. | In progress | ..... | ..... | ..... | ..... |

Great Western Railroad of Canada.

A valuable addition to the railroad system of the country has been made by the opening of the above road. It is the direct prolongation of the New York Central line to Detroit; and by the Michigan Central, to Chicago, the great city of the North-West. The road extends from Niagara Falls, via. Dunkirk, to St. Clair river, opposite Detroit, a distance of 228 miles. Its cost is high for a new work, but we understand that it is very substantially constructed.

The public, however, are chiefly interested in the results that are to follow its construction, rather than in the peculiarities of the rail. As far as its connections are concerned, it is most fortunate, being the connecting link between two of the most productive roads in this country, the New York, and the Michigan, Central roads. The three, in fact, form one line, and the Great Western receives efficient support from its two associates. The interests of the three being identified, they must materially assist each other. With such assistance the road can hardly fail to be productive.

The route traversed by the above road, the Peninsula of Canada, is one of the most fertile portions of this Continent, and is well filled with an active and wealthy population, for whom the road runs in the convenient direction. We see no reason by which its local business will not be fully up to the average of western roads. Its value will soon be increased by the opening of the Grand Trunk of Canada, which will connect it with Montreal and Quebec. The road also connects with Buffalo, the most important market for the Peninsula, through the Buffalo and Brantford road, now in operation. Through the last named line it will be brought into connection with all the roads connecting at Buffalo.

Breakage of Railway Axles.

The present season appears to prove fatal for railway axles in the latitude of Albany. The Albany papers of only the last week report three breakages of engine shafts and fifteen of car axles upon the Central and Northern roads. The value of the best material, form and mode of construction of railway axles may be inferred therefrom.

The reports of the Reading Railroad contain annual statements of the accidents and their causes, which have occurred during the year. In 1852 there were 223 accidents from broken axles, and from July 1, 1848, to Nov. 30th, 1852, there were one thousand and sixty one (1061) accidents from this cause. In the same time there were 163 accidents caused by broken wheels, and 198 from wheels becoming loose on their axles. The rolling stock of the Reading road, on Nov. 30th, 1852, comprised 38 wheel and 4,576 4 wheel, coal cars; 145 8 wheel freight, 517 4 wheel freight, and 30 eight wheel passenger baggage, mail, and express cars. The number of locomotives was 103.

Affairs at Erie.

The affairs at Erie have, we think, assumed a more favorable aspect. Both roads have now the same gauge, though they are not allowed to connect. The cars, however, run along side of each other, so that the whole question is narrowed to a single point; whether a break shall be compelled where none exists in the gauge. We shall refer to this matter again next week.

The Pacific Railroad.

THE NORTHERN ROUTE.—Gov. Stevens has published in the Oregon *Pioneer*, the following in regard to the Northern route which he surveyed:

The geographical importance of the region of country between the Basin of the St. Lawrence, the head waters of the Mississippi and Puget Sound, its adaptation to settlement, its railroad routes, its emigrant roads and the nomadic tribes within its borders will be the subject of the following articles. Resting on the two great rivers of the eastern and western coast, the Missouri and Columbia, it connects by a navigable stream with the Hudson's Bay and the Arctic Ocean. Between the upper tributaries of these two rivers, the Rocky Mountains are broken into spurs, filled with beautiful and fertile valleys, furnishing several good passes much lower than the southern passes, and one being by barometric measurement more than 1,500 feet below the South Pass. The head of navigation of the Missouri is only about 700 miles from the waters of Puget Sound, inexhaustible is its lumber, its coal and its fisheries, and in the distance there is one long reach of the Columbia navigable for steamers.

From this head of navigation in 200 miles and in ten days, the emigrant reaches that beautiful valley in Washington Territory, at the base of the mountains which even the honest and simple minded Flathead Indians have filled with cattle, and raised wheat and potatoes for their own use. Through this valley all the Indians, from the Cascades to Rocky Mountains, pass on their way to the vast Buffalo plains between the Missouri and Yellowstone, where with the Crows and Blackfeet, they lay in their stores of meat and robes, and which has been the scene of many sanguinary conflicts. The best natural wagon roads connect the head of navigation of the Missouri with the fertile valleys along all the streams issuing from the Rocky Mountains to the head of the Yellowstone—valleys so mild cattle need not shelter in winter, rich in buffalo grass, abounding in wood, and the water of the purest quality, and game, buffalo, elk, deer, big-horn antelope, black bear in the greatest abundance. The passes are yearly traversed by the Flathead Indians between Christmas and New Years on horseback, and March is the favorite month for the breaking up of the buffalo hunt by the Washington Territory Indians, and their return across the mountains to their homes on the plains and in the valleys of the Columbia river and its tributaries. From the head of navigation of the Missouri through the territory of Minnesota and the region occupied by the Asseniboines, the Grosventres and the Blackfeet, the emigrant will find grass over every mile of the route, and water at never greater distances than fifteen and scarcely over at greater distances than ten miles. Myriads of buffalo occupy this vast region, and their numbers have not sensibly diminished, though 2,000 Red River hunters, each on his fast buffalo horse, four months each year pour death into their ranks, and they are almost the only subsistence of some 25,000 Indians.

Four routes within the Territory of Washington are pursued by the Indians in passing from the valley at the western base of the Rocky Mountains to the plains and valleys between the Cœur d'Eleiene and Cascade Mountains. The Cœur d'Eleiene Mountains, an extension of the Blue Mountains to Clark's Fork of the Columbia, north of which the range is known as Kouteny Mountains, occupy the whole width of the Territory for a distance of from 100 to 120 miles, is covered with heavy timber and numerous well grassed though narrow valleys. The Nez Perce, the Spokanes, the Peude d'Oleilles, the Cœur d'Eleienes, and other tribes, in crossing these mountains have three to four horses for each man, woman and child, and even children of a year and a half old will be seen guiding their horses, one hand only on the rein, entirely unconscious they were exciting the wonder and admiration of the passer-by.

The Cascade Mountains have two good passes, and on Puget Sound is found a climate of extraordinary salubrity, milder than that of Virginia, and

the same average temperature, though more equable than that of San Francisco, and a soil which yields rich returns to the husbandman. The strawberry is often in blossom in December and February, and ice has to be imported from the colder regions of the north.

The country between the Cascades and the Cœur d'Eleiene Mountains is generally well adapted to grazing or tillage, and much of it is exceedingly well watered. Many of the Indian tribes are known to be rich in horses, and they have made considerable advance in the cultivation of the soil.

Such is the general character of the country connecting Puget Sound the great roadstead of the Northern Pacific, with the great basin of the St. Lawrence. Tapping the magnificent valley of the Upper Mississippi, having within its borders the Missouri and Columbia, the tributaries of its wagon roads and its railroads, and themselves great channels of communication, the Rocky Mountains broken into spurs and filled with valleys, the other mountains having practicable passes, it adds not a little to its interest that it was the scene of the labors of our first, our most dauntless explorers, Lewis and Clark. The sagacity of Jefferson saw that here was a great natural route, and he placed the men at the work who made it known to the nation. Public attention has now become fixed upon this field of the country's first great exploration, accomplished nearly half a century ago. This field we will examine and describe in a series of articles.

Cincinnati, Union and Fort Wayne Railroad.

The following is the report of the President and Directors of this company to the stockholders.

Gentlemen:—In laying before you the first annual Exhibit of the affairs of the company, it may not be amiss to briefly review its history.

In May, 1852, the Cincinnati, Hamilton and Dayton Railroad being completed and running from Cincinnati to Dayton, and the Greenville and Miami Railroad in a forward state of completion from Dayton to Union, and its completion during that year, expected, and the Indianapolis and Bellfontaine railroad, being also in a forward state of completion to Union, and its completion expected during that year, the men having these roads in charge, conceived the project of making this line of railroad from Union to Fort Wayne, thereby extending the Cincinnati, Hamilton and Dayton, and the Greenville and Miami Railroads, to Fort Wayne, and making a Fort Wayne connection for the Indianapolis and Bellfontaine Railroad; and it was then determined to organize this company, so soon as the General Railroad Law of Indiana, then just passed, should, by publication, become the law of the land. The law, however, was not published until the fall following. In October, 1853, books were opened along the line for subscriptions of stock, to organize the company. The necessary amount being raised, articles of association were agreed upon and signed, and filed in the Secretary of State's Office on the 15th day of February, 1853, and the company thereby incorporated. At that time, the stock subscribed amounted to \$53,800.

The company was organized on the 22d of February, 1853, and immediately entered upon the work. An engineer corps was put in the field, under the superintendence of Robert M. Patterson, Esq., the able and efficient Engineer of the company and the whole line located on air lines from point to point named in the articles of association. The grubbing of the entire line was let at \$18,895, being \$287.50 per mile; and the grading of the entire line was let on the first day of September, to experienced and efficient contractors, at 16 cents per cubic yard, for excavation, and 18 cents per yard, for embankment. All the contracts are payable one-third in the stock of the company, and two-thirds in money.

In computing the cost of the road, the engineer has taken the contract prices as to the grubbing and grading, and estimated as to the bridging. From his report it will be seen that the graduation

and bridging of the entire line, 65.72 miles long, will cost \$198,779, being only \$3,024 per mile. This is very low, considering that tangents alone were used in the location. If roads pay elsewhere, in less fertile countries, the roadbeds of which cost from \$20,000 to \$30,000 per mile to prepare them for the superstructure, we may reasonably anticipate that ours, costing but little over \$3,000 per mile, to prepare it for the superstructure, will be a good paying road.

The company has taken lands in subscription for stock under the provisions of the law authorizing the same. They were not taken, however, at fancy prices, but at their cash valuation, ascertained by an appraisal made under oath, by an appraiser appointed by the company, who did not include perishable improvements in the valuation: nor did he take into consideration the prospective increase of value of the lands, on account of the construction of the railroad. Lands so appraised, amounting to \$100,000 have been conveyed in trust, to Stephen S. L'Hommiedien, Esq. of Cincinnati, to secure the payment of \$80,000 of bonds, that the Board have directed to be issued, based on said lands. Sixty thousand dollars of these bonds, bear interest at seven per cent. and twenty thousand dollars of them, bear interest at six per cent. Owing to the stringency in the money market, no portion of these bonds has yet been offered for sale. Having an entirely safe basis, I have no doubt they can be negotiated on favorable terms, as soon as bonds again become in demand in the market. As they are receivable for our lands, many of them will be taken by our contractors, and others on the line, for labor on the road.

In addition to the lands so conveyed in trust, the company has other lands which have been received since that conveyance was made, and is still receiving lands in subscription.

Our stock subscriptions now stand thus:

| | |
|--|-----------|
| Land subscriptions, closed by conveyance to the company..... | \$103,760 |
| Land subscriptions, unclosed, about... | 30,000 |
| Cash subscriptions, closed up by note or payment..... | 47,300 |
| Cash subscriptions, unclosed, about.. | 50,000 |

Total.....\$231,060

It will thus be seen that our subscription, if it can be made available, is sufficiently large to prepare the road-bed for the iron, and we are still receiving additions to our stock.

The right of way, eighty feet in width, has been procured over the greater portion of the line. In most cases it has been conferred voluntarily, the citizens through whose property the road passes, acting in the spirit of men who appreciate the advantages to accrue to themselves, as well as the public, from the construction of the road. In some cases the right of way has been purchased by the company on equitable terms. The Board desire to deal justly with all: and from a desire to secure the good will of land owners along the line, and to avoid litigation, have endeavored, in a spirit of liberality and justice, to compromise all claims for damages. A few persons, however, have obstinately persisted in such exorbitant demands as will, if continued, compel the Board to resort to legal means to procure the right of way. Some of those, too, who so persist, have hitherto occupied such a position in society, and had such a reputation for intelligence and public spirit, as led us to expect better things of them.

About one-half of the line is grubbed, and a considerable portion of grading is done on the first section, between Union and Portland.

Depot grounds at Fort Wayne, have been secured, in direct connection with the great railroad lines of that place. Machine-shop grounds at that point, have also been verbally contracted for. Depot grounds at Decatur, and machine-shop grounds at Union, have been secured.

Under the authority given me by the Board, I have contracted for a small number of ties, to be paid for in the stock of the company.

Our road is the last and finishing link in the

chain of railways connecting the cities of Cincinnati and Dayton, with Fort Wayne. It is not quite 66 miles in length, and passes through a country of unsurpassed fertility. It diverges something from a direct line to pass by the county seats of the two counties of Jay and Adams, but increases the distance only about a mile, by so doing. Its general direction is in the direct line between Fort Wayne and Cincinnati, and it will always do a large through business between those cities, and almost an equally large one between Fort Wayne and Dayton. But experience has shown that local business, in general, is as profitable to railroads as through business. The local business of our road will be equal to that of any road in the West. The whole transportation, both out and in, of Adams and Jay counties will pass over our road, and a great portion of that of Randolph, Wells, and Allen, in Indiana, and of Van Wert and Mercer, in Ohio. At Fort Wayne, our road will, by its terminus, be in direct connection with the Fort Wayne and Chicago Railroad, the Fort Wayne, Lacon and Platte Valley Air Line Railroad, the Wabash Valley Railroad, and the Ohio and Indiana Railroad, all of which railroads have their depot grounds in juxtaposition with that secured by this company. Business arrangements can be secured with all these companies. At Union, the southern terminus of our road, we will be in direct connection with the following railroads, in addition to our through connection with Dayton and Cincinnati, to wit: the Indianapolis, and Bellfontaine, the Bellfontaine and Indiana, the Columbus, Piqua, and Indiana, the Marion and Mississinewa Valley, the Evansville, Indianapolis, and Cleveland Straight Line, and the Sandusky, Fremont, and Union. No railroad has more varied or extensive connections than ours will have.

On the second day of April last, an agreement was made by this company with the Cincinnati, Hamilton and Dayton Railroad Company, the Twin Creek Railroad Company,* and the Greenville and Miami Railroad Company, for through tickets and freight bills, from Fort Wayne to Cincinnati, and for a uniform gauge over the whole line. This agreement has been ratified by all the companies, and is perpetual by its terms, and secures a continuous line, of uniform gauge, for all time to come, between the cities.

All of which is respectfully submitted, by order of the Board.

JER. SMITH, President.

January 4th, 1854.

Connection of Lakes Erie and Ontario.

Measures have been taken at Hamilton to organize a company for the construction of a railroad from that place to Port Dover, on Lake Erie. A railroad, on a route as direct as possible, connecting the navigation of the two lakes and with that of Grand River is an object at present of the greatest importance to the business interests of Hamilton.

Appointment.

We understand that Wm. M. Stockton, Esq., has resigned his office of chief engineer on the Charlotte Road, and has accepted the same position on the South Carolina Railroad.

Appointment.

We learn that Philo Hurd, Esq., late Vice President and superintendent of the Naugatuck Railroad has received and accepted the appointment to a similar post on the Madison, Indianapolis and Peru Railroad.

* This company is making a railroad, twenty miles long, from the Junction of the Greenville and Miami Railroad with the Dayton and Western Railroad, across to Carlisle, on the Cincinnati, Hamilton, and Dayton Railroad, by which the distance to Cincinnati will be made some ten or twelve miles less than to go by Dayton.

Trade of Buffalo.

From the Buffalo Republic we gather the following facts.

The population of the city is now 75,000. The city limits embrace 23,710 acres. The total value of real and personal estate is estimated at \$24,455,752.

The total value of the imports by Lake, during the year, is put down as \$36,881,230, being an increase over 1852 of \$1,937,375. The value of the produce brought in by the State line Railroad is estimated at \$2,231,273. This makes the total imports from the West amount to over \$39,000,000. Added to the imports from the East, it shows a commerce of over \$125,000,000.

The receipts of flour in 1853 were 983,837 bbls., showing a decrease of 315,676 from the year before. 218,296 bbls. were manufactured in the city.

The receipts of wheat have been 5,424,043 bu. Of corn, 3,665,793 bu. The aggregate quantity of grain of all descriptions received during the season was 11,078,751 bu.

The exports to Canada during the year amount to \$992,406. The imports from thence \$392,719.

The value of the exports by the Erie Canal was \$22,652,408, on which tolls were collected amounting to \$695,364. By the breaks of the last season the State lost tolls it would otherwise have received on property from Buffalo to the amount of at least \$150,000.

The value of imports by Canal was \$64,612,102, with an aggregate tonnage of 438,786.

The number of vessels that have arrived and cleared is set down at 8,298, with an aggregate tonnage of 3,252,978 26. Their crews amount to 131,000.

There are twelve Banks with an aggregate capital of \$1,475,000.

Pennsylvania Railroad.

The receipts of the Pennsylvania Railroad, for the year, ending Dec. 31st, 1853, were.....\$2,774,889 37

The expenses of transportation were 1,673,681 29

Leaving net earnings \$1,101,208 08

The expenses of operation were but \$346,879 35 more than last year. The relative reduction of expenses is due to the completion of the road, and the consequent dismissal of the boats and wagons formerly used on the Western division; together with a reduction in the rate of tolls over the State roads.

The total amount paid for tolls upon the State roads, Harrisburgh and Lancaster and Baltimore and Susquehanna railroads, has been \$779,611 62, all of which is included under the head of expenses of transportation. Of this amount \$213,775 62 was paid for the use of the Portage R.R.; besides which, \$20,000 were expended for wages of extra brakemen, required in crossing the planes, over what will be annually required for the same amount of business since the opening of the tunnel.

The through tonnage between Philadelphia and Pittsburgh has increased from 32,185 tons in 1852 to 73,499 during the past year, and the local tonnage from 36,793 to 86,133 for the same periods—making the total tonnage moved 159,632 tons, against 68,978 last year;—an increase of over 100 per cent. While the receipts from this source have increased from \$780,892 19 to \$1,507,520 50.

The cost of the equipment has been up to the end of 1853, \$2,652,676 37. There are 79 locomotives, 1,274 eight wheel and 137 four wheeled freight cars; 69 eight wheel passenger, and 24 eight wheel baggage and mail cars. 32 locomotives and 5 passenger cars already contracted for, re-

mained to be delivered on the 1st of January, the cost of which is estimated at \$325,000.

The treasurers accounts show that the receipts from Stockholders in payment of the capital stock of the company, was, at the close of last year.....\$11,228,020 00
The receipts from loans, &c..... 5,084,947 91

Amount.....\$16,312,967 91

Which has been expended as follows:

| | |
|--|-----------------|
| Graduation and machinery, single track..... | \$6,271,705 90 |
| Superstructure, including iron rails, chairs, cross-ties, ballast, &c..... | 3,053,613 65 |
| Engineering..... | 376,826 44 |
| Land damages, and real estate in Pittsburgh and on line of road..... | 474,684 15 |
| Real estate in Philadelphia city and county..... | 344,341 62 |
| Harrisburgh Railroad..... | 7,173 41 |
| Graduation & superstructure of 2nd track..... | 1,152,852 59 |
| Machine shop, shop machinery, station and warehouse... | 991,966 36 |
| Locomotives..... | 658,329 14 |
| Freight cars..... | 745,401 81 |
| Passenger cars..... | 232,882 94 |
| Road and hand cars..... | 24,696 12 |
| Balance of interest account, chargeable to construction..... | 26,763 51 |
| | \$14,360,637 64 |
| Subscription to the Stock of the Ohio and Penn'a R. R..... | \$150,000 00 |
| Do. Ohio and Indiana Railroad..... | 300,000 00 |
| Do. Marietta and Cincinnati R. R..... | 650,000 00 |
| Do. Maysville and Big Sandy R. R..... | 100,000 00 |
| Do. Springfield and Mt. Vernon R. R..... | 100,000 00 |
| | \$1,300,000 00 |
| Leaving in the hands of Treasurer... | \$652,830 27 |

The amount received by the Treasurer during the year 1853, from the business of the road, &c., was.....\$2,768,769 72

Of which there has been paid during the year to stock and loan holders, for interest and for expenses of working the road, &c. 2,466,259 50

Leaving a surplus which has been credited to interest account, of...\$302,510 22

Great Western Railway of Canada.

The following are the names of the Directors and managing officers of the Great Western Railway:

President—Robert W. Harris.
Managing Director—C. J. Brydges.
Directors—Isaac Buchanan, W. T. McLaren, Richard Juson, George S. Tiffany, Henry McKinstry, J. W. Brooks, Erastus Corning, John M. Forbes, Sir Allen McNab.
Chief Engineer—Roswell Benedict.
Second Engineer—John T. Clark.
Resident Engineer from Niagara Falls to London—Mr. Reed.
Resident Engineer from London to Windsor—Mr. Scott.

Journal of Railroad Law.
THE CASE OF THE BELLEVILLE AND ILLINOISTOWN RAILROAD COMPANY.

In October last we published the decision of the Circuit Judge Underwood, of Illinois, declaring that this company had no right to extend their road to Alton. This decision has now been reversed by the Supreme Court of Illinois, and the extension of the road sanctioned, the Chief Justice dissenting from his brethren.

The controversy turns upon the true construction of what the enemies of the company unanimously designate as the "spider," the "snake," the "serpentine," the "crawling" 17th section of the charter, which does not upon its face give proof of much that is ugly or venomous, whatever hidden mischief it may contain. It is as follows:

"Said company shall have the power to extend to, and unite its railroad with, any other railroad now constructed, or which may hereafter be constructed in this State; and for that purpose full power is hereby given to said company, to make and execute such contracts with any other company as will secure the objects of such company."

The Supreme Court declares in reference to the clause above cited, that its obvious and natural interpretation is its only true one, and that admitting it to be possible that the Legislature of Illinois really intended to prevent the extension of the road in question to Alton, they could not have used language more appropriate to such a purpose than that of the clause above cited.

It was upon the argument strenuously urged in opposition to this mode of construing the charter, that a full consideration of the different provisions thereof, showed that the Legislature intended to confine the operations of the road to the county of St. Clair. The charter provides that the awards of the Commissioners, in relation to damages for lands taken, must be filed in the Clerk's office of that county; that the notice of application to the Governor for the appointment of Commissioners must be advertised in a newspaper of that county; that in case of an appeal from the decision of the Commissioners, the bond required in certain cases, must be acknowledged before the Clerk of St. Clair county.

But the Court decided that these provisions restricted the operations of the company, as contended by those who were opposed to it. The principal object of the charter was regarded by the Court as being the charter of a road in the county of St. Clair from Belleville to Illinoistown. This being the principal object of the charter, it was natural that as the principal office of the company was to be at Belleville in that county, so the legal proceedings in regard to the laying out of the road, should be instituted there, so far as the provisions of the charter indicate. The principal object contemplated by the Legislature, was laying out the road from Belleville to Illinoistown, and they shaped the charter accordingly, but nevertheless, they clearly contemplated the possibility of an extension of the road beyond the county of St. Clair, and with this view the 17th section above cited was introduced with the bill.

Such does the Court understand the legal intention of the Legislature to be, as fairly inferred from the language they have employed. It was urged that it never could have been designed by the Legislature to authorize the extension of the

Belleville and Illinoistown road to any and every railroad in Illinois, at its pleasure. But if not, they should not have used such language as compels the court to draw an inference which was not intended. The Court cannot inquire into the details of Legislative history contemporaneous with the enactment of laws. The law, when once enacted, must speak for itself; it is the exponent of the will of the Legislature, and must not be frittered away by the Courts. Although the language of a statute may be directly contrary to what the Court may privately know to have been the actual purpose of and intention of the Legislature which enacted it, provided the language of such statute is unequivocal and explicit, the Court is bound to enforce it. Accordingly, when the Legislature of Illinois passed an act to increase the punishment of manslaughter, and at the same time repealed the old laws in regard to this offence, the Court was reluctantly obliged to discharge several prisoners who stood indicted for manslaughter, because [by the unavoidable interpretation of the statute, the law, by virtue of which they had been imprisoned, was annulled. Yet this result was due, not to the actual intention of the Legislature, but only to an oversight of theirs in the framing of a statute.

The Court also overruled the Constitutional objections to the charter, as embracing different subject matters. The object of the charter was to authorize the construction of a railroad, and the particular appellation of a company, as in this case, the Belleville and Illinoistown was to be regarded rather as a matter of fancy than of exact description. The charter sanctioned the construction of a road and of nothing foreign thereto.

Very many charters were far more complex; sometimes providing both for the construction of branch roads and for the appropriation of immense tracts of land in carrying out the main design of the incorporation.

In conclusion, the Court reversed the judgment of the Circuit Court and remanded the cause to that Tribunal for its final disposition.

Steam Carriages on Common Roads.

The *Scientific American* takes exceptions to all advocacy of steam carriages on highways, on the ground that railways are more economical in operation. The legitimate conclusion upon these premises would therefore be that highways should be dispensed with altogether, as incompatible with "science and common sense." The *American* either mistakes the question at issue, or else the purpose of highways. We assume that highways are necessary for a great amount of business, but which at the same time would not support a railroad. All omnibus business is of this description. If this be granted the question is not one of road but of power. It is not that of highways against railroads but of steam against horses. The result may be embraced in the question "how in the name of science and common sense can the *American* advocate horse power in these days of railways and cheap locomotion?" If highways are indispensable to a large business of uniform movement why not give them the advantage of steam?

In the following article, copied from the *American*, we will admit that not less than a 300 or perhaps 350 horse engine would be required on a common road to do the work (load \times by speed) of a 40 horse engine on a railroad.

"We see that steam carriages for common roads, are being again advocated and commented upon by a number of our cotemporaries. How in the name of science and common sense they can do this is surprising to us, in these days of railways and cheap locomotion. It might have appeared sensible to advocate steam carriages for common roads before railroads were invented, but not now. When it is considered that heavy rails and straight lines lessen the running expenses of railroads about 40 per cent.; and when it is considered that a 40 horse power engine will draw as much on a railroad as a 200 horse power engine on a common road, the idea of using them on common roads is preposterous. The question is one of economy, and the man who advocates locomotives for common roads, when such superior advantages are obtained from railroads, forgets, that Rip Van Winkle sleeps no more.

New Slide Valve for Locomotives.

The capacity of the steam ports, for supplying steam to the cylinders of locomotives, is influenced materially by the adjustments of the valve. With the link motion, in general use for effecting variable admissions of steam to locomotive cylinders, an unavoidable consequence is the contraction of the steam openings with successive reductions of the motion of the valve. Assuming that the general allowance of 1-14th the area of the piston is the proper proportion for the steam opening, we may compare the results derived from the link motion and obtain an idea of the necessity for their improvement.

The following table shows the successive contractions of the steam openings, attendant on increased expansion, in the later engines of Rogers, Ketchum & Grosvenor's manufacture, and having cylinders of 16 inches diameter and 22 inches stroke, and ports of 14 inches by 1 1/4 inches.

| Steam Opening in inches, of 22 inch stroke. | Area of port. | Area of circle of equal area. | Diam. of opening to area of piston. | Proportion |
|---|---------------|-------------------------------|-------------------------------------|------------|
| 19 1/8 | 1 1/4 | 17 1/2 | sc. 4 3/4 | 1.12 |
| 18 | 1 1/8 | 15 3/4 | sc. 4 1/2 | 1.13 |
| 16 | 3/4 | 10 1/2 | fl. 3 3/8 | 1.19 |
| 14 | 9-16 | 7 7/8 | fl. 3 1/8 | 1.25 |
| 12 1/2 | 1/2 | 7 | 8 | 1.29 |
| 11 | 7-16 | 6 1/8 | 2 13-16 | 1.33 |
| 9 1/2 | 3/8 | 5 1/4 | 2 9-16 | 1.40 |
| 8 | 5-16 | 4 3/8 | 2 3/8 | 1.46 |

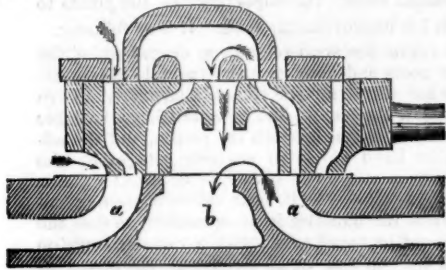
The contraction of the exhaust ports is not so great an extent, but as the exhaust should be made in the shortest interval of time a double opening with a given throw of valve, would tend to relieve it. The "double exhaust," as Hackworth's valve is usually misnamed, only retains the steam within the valve for a certain time, after which it allows exhaustion through two ports not in immediate connection with the cylinder. The escape of steam from the cylinder is not materially expedited by its action, nor is that made an object of its use. Its primary object was to pass a portion of the exhaust steam from one end of the cylinder to the other, to save steam for "lead," but in some applications of this valve to engines built at Manchester, N. H., we know that the cavity or "throat" of the valve was narrower than the distance between the inner edges of the steam ports, so that this effect was lost.

To avoid the contraction of the induction ports, John V. Gooch, of the London and South Western Railway of England, applied a stationary plate to

the back of the valves of his engines, having openings adjusted to match other openings in the valve, so that admission of steam occurred at two points at the same time. This is shown below.



Zerah Colburn has arranged a valve in combination with this plan, to effect a double exhaust, and also, if necessary, to avoid "compression" of steam between the piston and cylinder head, after the valve has closed the port for exhaust and just previous to the admission of steam. The valve is shown below.



The upper portion (grained downwards in the cut from right to left) is a stationary plate, resting upon the back of the valve, and having steam openings for induction, and a cavity with bars for extra exhaust. The central portion of the stationary plate is similar in form to a Hackworth valve. By adjusting the width of the bars, and of the exhaust passages in the valve, all "compression," such as has been before spoken of, may be avoided. Or, by making the bars of sufficient width to close the exhaust passages in the valve, when the cylinder port is closed by the valve, the usual "compression" will be preserved.

Mr. Colburn, of this Journal, will send working drawings of this valve to parties desiring them.

Mr. Robertson, of the firm of Palm & Robertson, of St. Louis, merits the credit of an invention for the same purpose as the above, and quite nearly the same in principle, except that another wearing surface is involved. Mr. Robertson has already applied the double induction to some of the locomotives building at his works, and, as we learn, with an improved result in working.

With the improved means for the passage of steam, the link motion is destined to become universally used for efficiency, economy and safety. Some of the new engines of the Erie road, as we learn, are being fitted, however, with the separate cut-off; a step backwards as we should judge which none but a strict conservative would take.

Copper from Lake Superior.

The copper export from the Lake Superior mines for the season of 1853, is stated at 2,535 tons, of the gross value of \$1,014,000. About 1,600 tons were shipped to Cleveland, and 935 direct to New York. The value of the smelted copper at Cleveland, when it is prepared for the Western markets, is about \$600 per ton.

Belvidere Railroad of New Jersey.

The first train over the Belvidere Railroad reached Phillipsburg, opposite Easton, Pa., on Friday, Feb. 3. About 500 passengers went through from Philadelphia, while at Lambertville, N. J. the train received an accession in the Governor and Legislature of New Jersey.

Annual Meeting of the Boston and Lowell Railroad Company.

The Annual meeting of this Corporation was held at the office of the Treasurer, in Boston, on Wednesday Jan. 4.

The report of the Directors for the year ending 30th November, 1853, was presented. The gross receipts for the year have been \$434,599 99, of which \$172, 882 01 was from passengers, and \$261,717 98 from freight. The receipts for the year ending Nov. 30, 1852, were \$388,108 37.—Showing an increase of income for the year 1853, of \$46,491 62. The running expenses for the year 1853 were \$316,869 23; to which should be added balance of interest account, \$3,632 42 and the result is that the net profits of last year's business has been \$114,098 34, or about 6½ per cent. on the capital paid in.

Of the income about 62½ per cent, or \$271,791 22 have been derived from business confined to the Boston and Lowell Railroad: and 37½ per cent, or \$162,808 77, from that done in connection with other railroad companies. Of the former, amounting to \$271,791 22, a little more than one half, \$137,808 58 has been for the transportation of passengers, and \$133,982 64 for that of merchandise; while, of the \$162,808 72 received for work done in connection with other roads, \$35,073 43 were for passengers, and \$127,735 34 for merchandise.

As already stated, the gross income has been \$46,491 62 larger than for the preceding year; the passenger receipts having increased by \$15,712 06 and the freight receipts by \$30,779 56. The net profits in 1852 were \$130,881 04; in 1853, \$114,098 34.

Some progress has been made in the work of extending the road from East Cambridge to Market street in Boston. The amount charged to that account is \$35,646 87.

The whole amount of the debt of the Corporation is \$205,500. The balance to the debt of the agent, for wood, rail iron, and other materials on hand, and for uncollected freight is \$45,194 13.

The total number of passengers carried in the cars has been 657,391. Number carried one mile, 9,576,208; tons of merchandise carried in the cars, 302,630; tons carried one mile, 7,542,674; rate of speed adopted for express passenger cars, including stops, 34 66-100 miles per hour; average rate actually attained, including stops, 34 1-10 miles per hour; rate of speed adopted for accommodation trains, 26 miles per hour; speed actually attained, 25 29-100 miles; average rate of speed adopted for freight trains, 12 miles per hour.

The year of largest receipts was in 1848, \$461,339 35; of largest net receipts, 1847, \$195,147 24. From 1839 to 1851, the annual dividend was 8 per cent, in 1852 6½ per cent., and in 1853 6 per cent. The surplus of 1853 was \$4,298 34. Total surplus on hand, \$99,742 37.

The report was accepted and the following Board of Directors were chosen:—George W. Lyman, William Sturgis, Eben Chadwick, Isaac Hinckley, and G. Howland Shaw.—*Boston Traveller.*

Railroad Iron via Toledo.

The total amount of railroad iron cleared at Albany by the Erie Canal during the year 1853, was 73,660 tons. The amount received by Lake at Toledo, the same season was.....45,020 tons In 1852.....33,208 "

Increase.....11,812
Or 38½ per cent.

Of this amount there were shipped by Canal from Toledo, in 1853.....29,035 tons In 1852.....20,966 "

Increase.....8,069 "
Or 38½ per cent.

Supposing the amount received the past season to average 60 pounds to the yard, the quantity is sufficient for the construction of 426 miles of road. At 56 pounds, which is perhaps nearer the average, it is sufficient for 456 miles.

Car Building in Madison, Indiana.

The following article, copied from the Madison Banner, shows the extent and efficiency of one of the most important manufactures established in that place.

SOUTH WESTERN CAR SHOP.

Prominent among the large manufacturing establishments, involving heavy capital and many equipments, in our city, is the Southwestern Car-shop of Wm. Clough.

We were not, until recently, at all aware of the large extent of this establishment and of the business done by it. The smoke of its forges, the ring of hammers, and the din of machinery, the piles of lumber, and the number of workmen, however, soon assured us of its dimensions and its prosperous business. We found, on inquiry, that Mr. Clough has executed orders, by constructing cars, passenger or freight, or both, for nearly every road in Indiana—that his work is familiar on the Terre Haute and Richmond, the Lafayette and Indianapolis, the New Albany and Salem, the Indianapolis and Bellefontaine, the Jeffersonville, and the Indianapolis and Lawrenceburg roads. This fact, of itself, best evinces the good and wide repute, for workmanship, of the Southwestern Car Shop. We know no better combination of tact, skill, capital and industry than in this shop. We have taken some pains to know some of the details of this "institution" as it is called.

The principal shops are constructed in the form of three sides of a hollow square, with an East front of one hundred and twenty feet and a front on Jackson and High streets of each one hundred and sixty feet. The machine shop is seventy by one hundred feet, and the truck shop forty by eighty feet. In addition to these are the dry house and steam room for preparing lumber, and numberless auxiliary buildings, sheds, &c., which should be computed by the acre.

As it is the proprietor's design to excel in superiority of work, he has provided himself with all the latest and most approved machinery, including the best specimens of machines for tenoning, wood boring, grooving and moulding, wheel boring and punching, scroll and circular saws, drill presses, bolt cutters, and very many other machines of which we know not the names. The blacksmith shop has twelve forges and the necessary appliances for rapid work.

The number of hands employed is about one hundred, receiving weekly wages of from nine to fifteen dollars. The house accommodations for those hands and their families, grouped around and near the shop, constitute, of themselves, a village and an important suburb to the city, recently grown up.

The machine and manual capacities and all appliances are adequate to the construction of three hundred freight and twenty-five passenger cars per year.

Grand Trunk Railway of Canada.

Earnings for week ending Jan'y 7th, 1854.

| | |
|------------------------------|------------|
| 3,881 passengers..... | \$3,226 98 |
| 1,816¾ tons merchandize..... | 3,384 78 |
| 117,072 feet lumber..... | 156 60 |
| Other earnings..... | 1,233 36 |

Total equal to £1,644 3s 9d.....\$8,001 72

Week ending Jan'y 14th, 1854.

| | |
|------------------------------|------------|
| 3,233½ passengers..... | \$2,466 24 |
| 2,463¾ tons merchandize..... | 3,945 85 |
| 327,516 feet lumber..... | 499 64 |
| Other earnings..... | 1,959 83 |

Total, equal to £1,822 18s. 6d.....\$8,871 56

Week ending Jan'y 21st, 1854.

| | |
|------------------------------|------------|
| 3,706 passengers..... | \$3,019 79 |
| 1,493½ tons merchandize..... | 4,514 44 |
| 488,822 feet lumber..... | 831 10 |
| Other earnings..... | 2,268 15 |

Total, equal to £2,184 19s 3d.....\$10,633 48

New England Railroads.

We would call attention to the article in another column, headed "Concentration of Power." Although somewhat elaborated, we believe it contains facts of the greatest importance to the interests of many of the New England roads. We think that while Mr. Colburn has shown the elements which enter into the cost of transportation, he has also shown that a large proportion of the latter is affected only to a moderate extent by the application of the principle advocated, and that the net earnings would be largely increased in the case of its application. Taken in connection with his previous articles on the economical working of grades, it demonstrates that the Western road, and others having similar characteristics,—need not require, in comparison with more level roads, a working expenditure in proportion to their total rise and fall. It shows that, were there a large business open to competition, the mere reduction of grades by a rival road could not warrant the expenditure for its construction.

The article to which we have referred discusses a principle, but omits the full examination of the present system of working the Western road. From some tables, however, prepared by Mr. Colburn, may be gathered an idea of its results. These are annexed below.

Table of Movement of Freight.

| Year. | Tons of freight moved one mile. | Per cent of Eastern bound freight moved. | Per cent of Western bound freight moved. | Miles run by freight trains. |
|-------|---------------------------------|--|--|------------------------------|
| 1847 | 28,087,628 | 75 | 25 | 513,772 |
| 1848 | 24,656,129 | 70 | 30 | 454,272 |
| 1849 | 25,307,146 | 70 | 30 | 460,941 |
| 1850 | 25,206,308 | 72 | 28 | 453,111 |
| 1851 | 23,304,050 | 71.4 | 28.6 | 459,323 |
| 1852 | 23,724,070 | 69 | 31 | 510,468 |
| 1853 | 28,153,554 | 66.6 | 33.3 | 589,314 |

Table of Number and Capacity of Trains.

| Year. | Through trips each way, equal to miles run. | Through trips each way daily, for 313 days. | Average weight of East bound freight, pr. train. | Do. of West bound do. per train. |
|-------|---|---|--|----------------------------------|
| 1847 | 1,646 | 5.26 | 81.9 | 27.3 |
| 1848 | 1,456 | 4.65 | 76.00 | 32.6 |
| 1849 | 1,477 | 4.71 | 76.86 | 32.94 |
| 1850 | 1,456 | 4.65 | 80.07 | 31.13 |
| 1851 | 1,472 | 4.70 | 72.44 | 29.02 |
| 1852 | 1,636 | 5.23 | 64.13 | 28.81 |
| 1853 | 1,888 | 6.00 | 64.00 | 32. |

Table of Receipts and net Earnings; from all sources.

| Year. | Gross Earnings. | Net Earnings. | Per cent. of net Earnings. |
|-------|-----------------|---------------|----------------------------|
| 1847 | \$1,325,336 06 | \$648,646 31 | 49 |
| 1848 | 1,332,068 29 | 679,711 18 | 51 |
| 1849 | 1,343,810 57 | 755,487 99 | 56 |
| 1850 | 1,366,252 47 | 761,964 32 | 56 |
| 1851 | 1,353,894 63 | 756,138 43 | 56 |
| 1852 | 1,339,373 09 | 683,194 92 | 51 |
| 1853 | 1,525,223 02 | 746,736 00 | 49 |

By a table contained in the article referred to it will be seen that the average charge per ton per mile has been nearly 2.8 cents for several years. Allowing the passenger business to be as profitable now as in 1847, the above tables show that in those years wherein the capacity of freight trains

was greatest and their number, the least, the net earnings were, compared with the relative amount of net earnings for other years, nearly 15 per cent. the greatest.

While this result has been presented the depreciation of iron, at least, has been much greater than was estimated in 1852 and allowed for in the outlays since made. In the report of the investigating committee, dated Feb'y 11th, 1852, it was estimated that the duration of the iron, then in the single track would be about eight years. At the rate of present renewals the whole will be taken up after an average use of not more than 4 years—perhaps not so much.

It appears that the motive power of 1853 is the same as that of 1847; that, as the business has increased, more trains have been run, and the expenses have increased in proportion, or even in a greater proportion as has just been shown. Competition has increased and, with increase, has employed better facilities, and the consequence is the diminution of eastward bound business on New England roads.

To reduce the expenses of transportation, and thereby the charge on the freight transported; to invite a freight business by lower rates affording equal remuneration, and thereby to secure the travel which follows trade, Mr. Colburn proposes heavier engines. The expedient is the same as is already adopted by the Reading, Pennsylvania Central, Baltimore and Ohio, and, to an extent, by the Erie roads, and involves no new principles or untried applications. The merit of Mr. Colburn's labor is in the complete exposition he has given of its advantages, such as, we feel assured, the class of roads similar to the Western must yet secure.

Franklin Canal Company.

The following statements are from the report of the Franklin Canal Company, presented to the Pennsylvania Legislature:

The Company have expended on that portion of their railroad which they have constructed and now own, extending from the City of Erie and the west bank of Crooked Creek, in Springville township, a distance of about twenty miles, the sum of \$602,252 57. This sum includes cost of ballasting and fencing the road and station building. The gross earnings of said Company's road for one year, commencing Dec. 1, 1852, and ending on the first day of December, 1853,

Amounted to.....\$129,906 87
Deduct running expenses
and repairs of track...\$50,274 35
Interest on rolling stock
on the road—taxes on
\$500,000 capital stock
—interest on \$66,000
bonds issued by the
Company.....14,271 38

And interest on \$36,252 57 due the
C. P. and A. R. R. Co.....65,360 64

From this sum should be deducted the estimate of annual deterioration on such parts of the Company's works and fixtures as are liable to decay or destruction by time or use, as set forth in the report of the Directors, and it leaves the net earnings a fraction over 7½ per cent. on the capital of \$500,000.

The Company have issued \$66,000 Bonds, secured by mortgage on the road, and which are still outstanding. The Company also owes the Cleveland, Painesville and Ashtabula Railroad Co., for cash advanced, \$36,252 57, making the entire indebtedness of the Company \$102,252 57.

Improvement in Steam Hammers.

The advantage of steam over other hammers is in their power of action, and in the control which may be had over their movements. The latter point is of particular importance in finishing forged work, as without it, accuracy of form cannot be obtained, and there is great waste of iron and labor in turning and planing. Power of action is also essential in making sound forgings.

We learn that Mr. Robert R. Taylor, of Reading Pa., has made an important improvement in the valves and passages of steam hammers, and has built hammers with these improvements, so sensitive to the valve as to allow of placing a watch upon the anvil, and of breaking only the crystal, without injuring the dial. The claim attached to his patent shows the importance of the points to which his improvements tend. It is as follows:

"I claim the arrangement, as described, of the steam ports and passages, the variable automatic valve for directing the steam alternately above and below the piston, and for admitting a variable quantity of steam beneath the piston, and the adjustable hand valve, to exclude altogether the steam from above the piston, or to admit a greater or less quantity of it, both valves being adjustable while the hammer is in operation, so that the steam can be made to act with a variable force on either the up and down strokes of the piston, or of both, or prevented from acting on the down stroke, without interrupting the action of the hammer, as set forth."

We may allude to this improvement again.

South-Western Car Shops,
Madison, Indiana.

THE subscriber is prepared to execute orders at short notice, for all kinds of Passenger, Freight and other descriptions of Railroad Cars. Work delivered at any point accessible by railroad, or by the Ohio and Mississippi rivers.

Facilities for transportation, enable the subscriber to afford peculiar advantages to Companies requiring work delivered in the South and West,
W. CLOUGH.

Refer to

JNO. BROUGH, Esq. WINSLOW, LANIER & Co.
Feb. 18. 1m.

To Railroad Engineers and
Contractors.

WANTED, a corps of efficient Engineers and Contractors, for the construction of a Railroad in one of the Southern States. Apply to
DUFF GREEN.

New York, Feb. 14th, 1854.

Wm. J. Young

HAS removed his Engineering and Surveying Manufactory to
No. 23, North Seventh Street, Philadelphia.

Railroad Letting.



PROPOSALS will be received by the undersigned at the Engineer's Office, Dover, Delaware, until March 14th, inclusive, for the Graduation, Masonry and Superstructure of the DELAWARE RAILROAD, extending from the New Castle and Frenchtown Railroad to Seaford, a distance of 70 miles, through a healthy region, and convenient to procure hands and supplies.

The work will be divided into sections of about 4 miles each.

Maps, profiles, and specifications will be ready for the examination of contractors, after the 1st of March.

Bidders personally unknown to the undersigned, will be expected to produce satisfactory evidence of their responsibility.

D. H. KENNEDY,
Resident Engineer.

Feb. 18-tm14

FULTON CAR WORKS, CINCINNATI, OHIO.

WE respectfully call the attention of Railroad Companies and Contractors in the West and South to our establishment. Our facilities for manufacturing are extensive, our work is made from the best material the country affords, and of the most superior workmanship. We are prepared to execute to order on short notice Passenger Cars of the most approved description and elegant finish; Baggage, Freight, Cattle and Gravel Cars, also Crank and Lever Hand Cars, Trucks, and Railroad work generally.

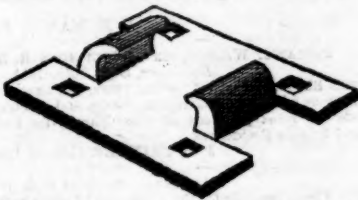
To Railroad and Canal Co.'s, Contractors, &c.

THE undersigned would direct the attention of Chief Engineers and Contractors to the facilities they possess for supplying them with laborers, mechanics, &c. of any description, and also to inform them that they forward such men to whatever destination they may be required.

Companies or Contractors desirous of receiving steady and industrious men, will be promptly supplied at the shortest possible notice.

JOHN J. HELLING & CO.
No. 85 Greenwich street, New York.

NEW YORK Wrought Iron Railroad Chair Company, Office, 38 Exchange Place, New York. A. B. LANSING, President.



THIS Company is prepared to receive orders for the manufacture of Wrought Iron Railroad Chairs of the best material, on a new and superior model, and by improved patented machinery.

The thickness of the Lips of the Chair increases through the bend, where the greatest strength is required, and diminishes towards the edge;—so that a less weight of metal may be used and a strength acquired equal, if not superior, to that of a heavier Chair of uniform thickness.

Rail Road Letting.



PROPOSALS will be received at the Office of the Company in the City of Evansville, Indiana, until 6 o'clock, P. M., of Wednesday, 15th day of February, 1854, for the Grubbing, Grading and Bridging of that part of the 1st Division of the EVANSVILLE, INDIANAPOLIS, AND CLEVELAND STRAIGHT-LINE RAIL ROAD,

Extending from Evansville to the Crossing of the Ohio and Mississippi Rail Road, in Daviess County, a distance of fifty-four miles.

The work will be divided into sections of about one mile each, and proposals will be received for one or more sections, or for the whole line.

Maps, Profiles and Specifications will be ready for the examination of bidders on and after the 1st of February, and all necessary information given on application to W. C. MOORE, Chief Engineer.

O. H. SMITH, PRESIDENT,
W. CARPENTER, VICE PRES.
Evansville, Jan. 2, 1854.

Ontario, Simcoe & Huron R.R. CANADA.

THIS road opened in May last to Lake Simcoe is expected to be completed to the Georgian Bay, Lake Huron a distance of 96 miles in June next where it will form the shortest and most agreeable route to the North Western States to Lake Michigan and to the Mineral Regions of Lake Superior.

At present the Passenger Trains leave Toronto for Barrie (54 miles) daily at 8 a.m. and 3.30 p.m., returning the same day.—On the opening of the navigation a Steamer will ply on Lake Simcoe in connexion with the Trains and will convey passengers through that Lake and Lake Couchiching to Orillia whence a short portage of eighteen miles will take them to the waters of Lake Huron to the Steamer (Kaloolah) which runs to the Sault St. Marie and intermediate ports forming the most expeditious and agreeable route to the Mineral Regions of Lakes Huron and Superior.

Arrangements will be made on the completion of the road to the Georgian Bay for a line of first class Steamers to extend their trips to the ports on Lake Michigan.

ALFRED BRUNEL,
Superintendent.

Valuable Engineering and Mechanical Works,

IMPORTED and FOR SALE by
JOHN WILEY, 167 Broadway.

| | |
|---|---------|
| DEMPSEY'S PRACTICAL RAILWAY ENGINEER. 1 vol. 4to, with 50 Engravings, bound in half Morocco. | \$11.00 |
| SCOTT'S ENGINEERS' AND MACHINISTS' ASSISTANT, 2 vols. Quarto. | 20.00 |
| TREDGOLD on the LOCOMOTIVE ENGINE, half calf. | 15.00 |
| " on the MARINE ENGINE, half calf. | 24.00 |
| " on the STATIONARY ENGINE, &c., half calf. | 24.00 |
| TREATISE on the STEAM ENGINE by the Artizan Club. | 6.00 |
| WEALE'S THEORY, PRACTICE and ARCHITECTURE of BRIDGES, 3 large vols., half bound. | 25.00 |
| " SUPPLEMENTARY VOL. (just published), half bound. | 14.00 |
| TRAUTWINE on RAILROAD CURVES, turk. | 1.00 |
| " on EMBANKMENTS AND EXCAVATIONS. | 1.00 |
| WILMES' HANDBOOK of PLAIN and ORNAMENTAL MAPPING, and Engineering Drawing, for Civil and Mechanical Engineers. | 7.50 |
| WOOD'S PRACTICAL TREATISE on RAILROADS, 8vo. | 5.00 |
| RYDE'S TEXT BOOK for the USE of ARCHITECTS, ENGINEERS, SURVEYERS, &c. 1 vol Royal 8vo. | 8.50 |
| GREGORY'S MATHEMATICS for PRACTICAL MEN. 8vo. | 6.00 |
| BARLOW on the STRENGTH of MATERIALS and on CONSTRUCTION. | 4.50 |
| LARDNER on the STEAM ENGINE. New Edition. | 2'00 |
| SCRIBNER'S ENGINEER'S, SURVEYOR'S and CONTRACTOR'S POCKET TABLE BOOK. | 1.50 |
| SCRIBNER'S ENGINEER'S and MECHANIC'S COMPANION. | 1.50 |
| BUCK ON OBLIQUE BRIDGES. Illustrated with Plans, &c. | 4.00 |
| EXAMPLES of RAILWAY MAKING. With PRACTICAL ILLUSTRATIONS. | 3.50 |
| SIMM'S on LEVELLING and SETTING OUT RAILWAY CURVES. 8vo. | 2.25 |
| SIMM'S on MATHEMATICAL INSTRUMENTS, 8vo. | 2.25 |
| HAUPT on BRIDGE CONSTRUCTION. 8vo. | 3.00 |
| QUESTED'S TREATISE on RAILWAY SURVEYING and LEVELLING. 8vo. | 1.75 |
| Together with an extensive assortment of Books in every department of science. | |

LAWRENCE SCIENTIFIC SCHOOL, Harvard University.

THE next Term of this Institution will open on the second day of March, 1854, and continue twenty weeks.

Instruction by Recitations, Lectures and Practical Exercises, according to the nature of the Study, will be given in:

| | |
|---|------------------|
| Astronomy. | by Messrs. Bond. |
| Botany. | " Prof. Gray. |
| Chemistry, analytical and practical. | " " Horsford. |
| Comparative Anatomy and Physiology. | " " Wyman. |
| Engineering. | " " Eustis. |
| Mathematics. | " " Pierce. |
| Mineralogy. | " " Cooke. |
| Physics. | " " Lovering. |
| Zoology and Geology. | " " Agassiz. |

For further information concerning the School application may be made to Prof. E. N. Horsford, Dean of the Faculty.

Cambridge, Mass., January 1854.

Notice to Contractors.



CHIEF ENGINEER'S OFFICE,
Norfolk, Va., Jan. 8, 1854.

SEALED PROPOSALS will be received by the undersigned at this Office, from the 1st until the 20th day of March next, at sundown, for the "clearing" and "Graduation" on the line of the "Norfolk and Petersburg Railroad," between that portion of said road now under contract, and its terminus at Petersburg—covering a distance of about eighteen miles; also, for the "Culvert" and "Bridge" Masonry of the last section of said work.

At the same time, sealed proposals are invited for the "Abutment" Masonry of "Bridges" over the Eastern and Southern branches of Elizabeth River.

The work will be divided into sections of about three miles, and bids may be made for one or more of said sections.

The line, plan, profiles and quantities of work will be ready for examination on and after the 1st of March.

Specifications with forms of contract and proposal may be had of the undersigned after date.

Payments will be made in current funds during the progress of the work, in proportion of four-fifths of the amount due.

Of bidders personally unknown to the undersigned, evidence of their responsibility will be necessary; and of those to whom work shall be allotted, will be required bond and approved security in an amount not exceeding one-fifth of the amount of their contract, for the timely and faithful execution of the same.

The company reserves the right to accept such proposals as in their judgment will secure the prompt and faithful execution of the work according to contract, or to reject all if none are satisfactory.

The line is easy of access, the country through which it passes abundant in supplies and of a climate highly favorable for the prosecution of work at all seasons.

The work here offered for contract is of a character well worthy the consideration of the most responsible contractors.

W. MAHONE,
Chief Engineer.

January 19.

Norfolk, Feb'y 10th, 1854.

Sealed proposals will be received between the dates mentioned in the above notice, for the construction of two Iron Bridges with stone abutments and piers, one over the Eastern Branch of the Elizabeth River, 630 feet long, and containing about 3,300 cubic yards of masonry, and the other over the Southern Branch of the same stream, about 400 feet long, and containing some 1,700 cubic yards of masonry. Plans of bridges, with quantities of material and working drawings, will be ready for inspection after the 1st March.

From this date proposals will be entertained for the Clearing and graduation of several sections not included in the 18 miles mentioned in the above notice, and also for the bridges and culvert masonry upon said sections,—of the former about 3,560 cubic yards, and the latter 670.

W. MAHONE,
Chief Engineer N. & V. R. R.

Washburn Car Wheels.

Having secured the exclusive right to make and sell this celebrated wheel in Cincinnati, Covington and Newport, we are prepared to furnish them in any quantity, either fitted with axles or separate. These wheels are made of the best of iron, mixed in most approved manner.

Cincinnati, Ohio, January 18th, 1854.

KEOK & HUBBARD.

Railroad Iron.

5,000 TONS T RAILS, about one-half weighing 50 lbs. per yard and the remainder 56 lbs. per yard now in bond and for sale by

2d Feb'y.

JOHN H. HICKS,
90 Beaver street,

BLAKE'S PATENT FIRE-PROOF PAINT.

THIS extraordinary substance has now been tested nearly nine years, and its FIRE and WEATHER PROOF qualities are most extraordinary. Instead of the action of the weather destroying the coating as it does ordinary paints, it only serves to turn it to a perfect slate or stone, protecting whatever covered from the action of fire and weather, as will be seen by the testimony of the following persons.

BORTON GREEN, being called in the case of Blake vs. Belknap, after being duly sworn, testifies and says, that he resides in Ohio. A few days since examined a house that had been painted nearly eight years with said paint, and to all appearance, it was as perfect as the day it was put on, and could even now see distinctly the brush marks upon the surface.

NORMAN RUDD being called, and duly sworn in the above-mentioned case, says that he was owner or part owner of a large Machine Shop situate in Newmarket, N. H., that the Shop took fire and burned down, loss, \$50,000. The roof of a large Foundry near by, was covered with this paint, a Cupola upon the Foundry was not painted, it took fire and fell on to the roof and burned up, without apparently injuring the roof, except to char the boards underneath.

Amesbury, Conn., August 18th, 1851.

We were present at the burning of the Amesbury Factory, which was struck by lightning on the 10th of July last, and which, with the surrounding buildings, was painted with Blake's Ohio Fire Proof Paint, and have no doubt but that all the surrounding buildings would have been consumed had they not been painted with said paint.

JOHN TALBOT, Superintendent.
DAVID TALBOT, Agent.

Akron, Ohio, May 22d, 1850.

This may certify that we have been acquainted with Blake's Patent Fire Proof Paint for some years, and are well assured that it is really what its name indicates—fire-proof. We consider it a better fire proof than tin or zinc, and will insure buildings covered with it at a much lower premium than those covered with the above-mentioned metals.

H. K. SMITH, Sec. Summit Mut. Fire Ins. Co.
DAN'L S. LEE, Ag't of Medina Co. Mut. Ins. Co.
D. R. HADLEY, Ag't of Stark Mut. Ins. Co.
R. F. CODDING, Ag't Portage & Farm's Ins. Co.
J. A. BEALES, Ag't Portage Ins. Co.
WHEELER, LEE & CO., Col. Ins. Co.

The best evidence of the value of an article, is from the fact of persons of practical skill, having used in years past large quantities, and still continue to order largely for future use.

OFFICE OF THE PHILADELPHIA & READING RAILROAD CO.
Philadelphia, July 18th, 1850.

Dear Sir:—This Company have been and are using BLAKE'S FIRE PROOF OHIO PAINT extensively for Bridges and Buildings. In the course of time it becomes very hard, and seems to be both fire and water proof under any ordinary circumstances. We decidedly prefer it for the purposes named above, to any paint we have hitherto used, as it costs less and is much more durable.

JOHN TUCKER, President.

ENGINEER'S DEPARTMENT, P. R. R. Co.
Philadelphia, Feb. 17th, 1850.

Dear Sir:—Having used Blake's Fire Proof Paint on this Road for two years past, I am sufficiently satisfied with its superiority to continue its application to all the structures and cars on the line of the Penna. railroad. Yours, very respectfully,

J. EDGAR THOMPSON, Chief Engineer.

OFFICE PENNA. R. R., April 20th, 1852.

Dear Sir:—Ship immediately the fifty barrels yet undelivered our order for one hundred barrel Blake's Patent Fire Proof Paint, dated Feb. 15th, 1851, to care of Strickland Knens, Esq, Altoona, and care of John Covorie, Esq., Pittsburgh.

Yours truly,
J. EDGAR THOMPSON.

GEORGIA RAILROAD, Augusta, Ga., November 27th, 1851.

Dear Sir:—Please furnish us with (30) thirty bbls. Blake's Fire Proof Paint, Chocolate Color. We have been using Blake's Fire Proof upon Freight Cars and Buildings for the last three years, and it gives me pleasure to state that we have found it both more economical and durable than any other kind of paint.

F. C. ARMS, Gen. Supt.

I fully concur in the above recommendation.

JESSE OSMOND, Supt. Car Factory.

Portland, April 11th, 1851.

Dear Sir:—I have requested Mr. Emory, Ag't and Supt of the Y. & O. Railroad, to give you an order for twenty bbls. of Blake's Ohio Fire Proof Paint, for the use of this Road; and I take pleasure in adding, that I regard it as an article superior to any other introduced into the market and use, as also more economical in price, for coating Dupots, Cars, and every other material of wood or metal, exposed either to fire or weather; and I can cheerfully concur in recommending it accordingly for most uses and roofs generally. Please forward the amount of Mr. Emory's order by the earliest conveyance.

F. O. J. SMITH, President York and Cumberland R. R.

CAMDEN & AMBOY RAILROAD OFFICE.
Bordentown, March 4th, 1851.

In reply to your inquiry as to your opinion of Blake's Ohio Fire Proof Paint, I would state that we have used considerable of it during the last two years, and consider it a first rate article, and hereafter shall prefer it to any other paint, for Buildings, Bridges and Cars outside.

R. S. VAN RANSELLER, Superintendent.

ENG'G'S OFFICE, BALTIMORE & OHIO R. R.

Dear Sir:—Being satisfied with the testimonials you here produced, that Blake's Fire Proof Paint which you have for sale is a valuable article for the purposes which you mentioned, I now give you an order for 50 barrels, of 350 lbs. or thereabouts, of the paint; 25 bbls. of Black and 25 bbls. Chocolate color. Consign the paint to Jas. B. Jordan, Mount Clear Depot, Baltimore.

B. H. LATROBE, Chief Engineer.

OFFICE OF MASTER OF ROAD, BALTIMORE & OHIO R. R.
Baltimore, Nov. 2d, 1851.

Dear Sir:—After using "Blake's Patent Ohio Fire Proof Paint" for the last year, I have concluded to give you an additional order for 40 bbls. I feel a pleasure in saying that I consider it the best material for covering Wood, Brick, or Iron, now in use.

Respectfully your Obedt. Servant.

W. BOLLMAN, Master of Road.

SUPRINT'T OFFICE, RICHMOND & FREDERICKSBURG R. R.
November 6th, 1851.

Dear Sir:—In reply to your inquiry in reference to our satisfaction with Blake's Patent Paint, sold us last Spring, I would say that we are so well pleased with it that I should like to have you ship us seven bbls. more of the Chocolate at your earliest convenience. Yours, &c.

THOS. SHARP, Supt. R. F. and P. R. R.

JUNCTION HANOVER COUNTY, November 1st, 1851.

The Virginia Central Railroad Co. have been and are using Blake's Fire Proof Ohio Paint extensively for Bridges, Car-tops, &c. We decidedly prefer it for the purposes named above to any paint we have ever used, as it costs less and is much more durable.

C. R. MASON, Supt.

PHILAD'A. WILMINGTON & BALTIMORE R. R.

Baltimore, Sept. 10th, 1851.

I have used Blake's Ohio Paint for four years, and have found it to be an article of great economy and value, and calculated to supersede for most purposes all other paints, for Public Buildings and Private Residences.

J. R. TRIMBLE, General Agent.

ATLANTA, December 10th, 1851.

Dear Sir:—Please send me for the Atlanta and Lagrange Railroad Co., 20 bbls. Blake's Fire Proof Paint, Chocolate Color. I have used the paint for various purposes, and am well satisfied that it makes a good and durable coating.

L. P. GRANT, Eng & Supt. A. & L. Railroad.

SUPRINT'T'S OFFICE, S. W. Railroad.
Macon, December 5th, 1851.

Dear Sir:—Please ship us, care of Central Railroad Agent, Savannah, 2 bbls. Blake's Fire Proof Paint.

I have used on the Central Railroad, and on this road a considerable quantity of the above Paint, in the last four years, and have no hesitation in pronouncing it the best for wood that I know of, as a protection from the weather or fire.

GEO. W. ADAMS, Supt.

MACON & WESTERN R. R., Macon, Dec. 6th, 1851.

Dear Sir:—You will please furnish for this Company 8 bbls. Blake's Patent Fire Proof Paint, (Black color,) and 4 bbls. Chocolate color—in all 12 bbls. We have heretofore used Blake's Fire Proof Paint on Freight Cars and Buildings with much satisfaction, considering it both economical and durable.

EMERSON FOOTE, Supt.

MONTGOMERY & W. POINT R. R. Co.

Montgomery, January 21st, 1852.

We have been using Blake's Patent Ohio Fire Proof Paint for several years for painting Cars and Buildings, and have been highly pleased with it. You may send us twenty barrels of the paint; fifteen of the Chocolate color and five of the Slate color.

Respectfully,

SAM'L G. JONES, Engineer & Superintendent.

ALL ORDERS ADDRESSED TO

WILLIAM BLAKE, Patentee.

119 Pearl Street, New York.

To Locomotive Engine Builders and Engineers.

THE Proprietors offer for rent for a term of years, with immediate possession, the splendid property, known as the BELLEVILLE IRON WORKS, situated on the Mississippi, directly opposite the City of New Orleans, and within 300 feet of the River, with which it is connected by fine wharves and landings.

The buildings are of brick, with slated roofs, and were erected in 1848 at a very heavy expense; are of a most substantial and durable character and admirably fitted for a Foundry and Machine Shops, or almost any mechanical business. They now contain a new and powerful Engine and Boiler and sufficient machinery, say, planing machines—lathes—boring machines, blacksmith's tools, &c., &c., to employ 100 mechanics, and could be put in working order in a few days. The Buildings cover a lot 300 feet square and are amply large to receive the necessary machinery for the use of 800 to 1000 workmen.

The terminus and depot of the New Orleans,

Opelousas and Great Western Railroad is situated about 300 yards from the above property, which could be availed of to great advantage for the manufacture of Locomotives and Railroad work, generally as well as Steam Engines, Sugar Mills, and other descriptions of Machinery.

There are no Shops in New Orleans for the manufacture of Railroad Machinery, and as the Railroad Companies now organized in that city contemplate the construction of over 1000 miles of road,—a large part of which is already under contract,—the property now offered for lease offers a most eligible opportunity for parties desiring to contract to furnish the Engines and Machinery,—for those roads. Responsible contractors with their works on the spot would have an advantage over Northern Workshops in contracting for the Work of the Railroads terminating in New Orleans.

The Establishment and prospect of remunerating work to be secured immediately are worthy the attention of manufacturers and Engineers generally.

Applications from responsible parties will be

promptly attended to, and to satisfactory parties the proprietors of the Works can offer favorable terms and arrangements.

Letters may be addressed to

R. B. SUMNER,

No. 61 Camp Street,

New Orleans;

and further information may be had by applying to Messrs. BARSTOW & POPE, Pine Street, New York.

Railroad Iron.

1250 Tons Erie Pattern Guest and Co's make, weighing 87½ lbs. per yard, to be shipped from Wales in July and August, for this port—for sale by

June 9, 1853.

BOORMAN, JOHNSTON & CO.,
90 Broadway, New York.

Railroad Iron.

THE "Montour Iron Company" is prepared to execute orders for Rails of the usual patterns and weights, and of any required length not exceeding 30 feet per rail. Apply to

THOS. CHAMBERS, President,
69 Beaver st, N. Y.,

September, 1850.